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**Recurrent Personality Factors Based
on Trait Ratings**

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ON TRAIT RATINGS

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Project 7717, Task 17110

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ABSTRACT

Intercorrelations among ratings on 35 personality traits, selected as representative of the personality domain, were obtained for eight samples. These samples differed in length of acquaintanceship from three days to more than a year; in kind of acquaintanceship from assessment programs in a military training course to a fraternity house situation; in type of subject from airmen with only a high school education to male and female undergraduate students to first-year graduate students; and in type of rater from very naive persons to clinical psychologists and psychiatrists with years of experience in the evaluation of personality. Centroid or multiple-group factors were extracted and rotated orthogonally to simple structure. For one study, an independent solution was obtained in which analytic rotations were accomplished on an IBM 650 computer using Kaiser's normal varimax criterion. Five fairly strong and recurrent factors emerged from each analysis labeled as (1) Surgency, (2) Agreeableness, (3) Dependability, (4) Emotional Stability, and (5) Culture.

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RECURRENT PERSONALITY FACTORS BASED ON TRAIT RATINGS¹

INTRODUCTION

The measurement of personality by means of trait ratings has a history of at least fifty years, dating back to the investigations of Heymans & Wiersma (1909) in which 400 physicians rated over 2500 individuals. After a brief surge of interest in the area in the 1920's, few research studies were carried out on trait ratings until fairly recently. Several early investigators reported findings indicating that ratings of personality traits were quite unreliable, and thus not very useful measurements. At the same time, the increasing popularity of the Gestalt and Dynamic Psychology theories with their view that man must be studied as a whole person in action did little to stimulate interest in trait measurement. However, the concept of the "whole person," although it may ultimately lead to greatest accuracy of description and prediction, is unmanageable from a measurement point of view and will likely remain so for some time to come. Furthermore, as Cattell (1946) has pointed out, the trait concept does not preclude the concept of the whole person, since any person can be uniquely and adequately described by a combination of a number of independent traits or factors. Although early studies indicated personality trait ratings to be unreliable (low rater agreement¹, unstable (specific to the rating situation), and contaminated by a large general factor (halo), Symonds (1931) and Allport (1937) concluded that such deficiencies might be overcome by the use of fairly large groups of raters who have observed the subject's day-to-day behavior over a considerable period of time, and by requiring the rating of several subjects on one trait at a time, rather than the rating of each subject on several traits at a time.

Several recent studies have born out Symonds' and Allport's conclusions. Results from the Veterans Administration Research Program on the Selection of Clinical Psychologists as reported by Kelly & Fiske (1951) tentatively indicated that ratings on personality traits were predictive of future behavior. Tupes (1957, 1959) in studies using Air Force officer candidates and senior Air Force officers as subjects found peer ratings on personality traits to be predictive of later performance as second lieutenants in the case of the officer candidates, and to be related to concurrent but independent measures of officer performance in the latter group. Furthermore, the profiles of the correlations between personality traits and officer performance were quite similar in the two groups. All three of these studies, as well as one by Mays (1954), indicated that even though personality trait ratings by a single rater may be quite unreliable (about .2 to .3), ratings obtained from a group of raters (10 to 20 raters) when summed yielded scores whose reliabilities were quite satisfactory (.8 to .9). In general, it may be concluded that ratings on personality traits are useful predictors of future behavior and that such ratings yield sufficiently reliable individual differences to be useful in themselves, either for the study of individual differences in personality or as criteria against which other types of personality measures (for example, paper-and-pencil tests) may be validated.

As indicated by Eysenck (1953) and French (1955), many studies have been reported concerning the factor structure underlying personality trait rating variables. In spite of this fact the domain has not been at all clearly defined. Cattell (1945, 1947, 1948) has published two factor analyses of men and one of women, each based on ratings of 35 personality traits selected to represent the entire personality area. In each he found 11 or 12 factors which he has identified as similar in the three analyses. For many of these factors, however, the factor loadings are so small that some factor analysts would hesitate to try to interpret them at all. Fiske (1949) analyzed ratings of 22 of the

¹ Manuscript released by the author for publication as an ASD Technical Report in April 1961.

same or highly similar variables using beginning graduate students in clinical psychology for his sample. He obtained about the same factorial structure from ratings of the students by themselves (self-ratings), by their peers, and by clinical psychologists. However, a comparison of the factors isolated by Fiske with those defined by Cattell is quite difficult, in spite of the fact that the variables used by Fiske in the main corresponded quite closely with those used by Cattell. Some similarities can be noted between the Cattell and Fiske factors, but it is difficult to tell whether the differences observed are a function of divergent extraction and rotational philosophies, the nature of the samples rated, the nature of the rater groups, or the omission of 13 of the trait variables from the Fiske study. Attempts to compare the results of either the Fiske or Cattell analyses with those found by other investigators are generally futile, since it is rarely possible to determine from the studies whether all, some, or for that matter, any of the variables used are similar from one study to another. When what might be recurrent factors are found (e.g., extroversion-introversion, emotionality-stability, and conformity-independence), differences in the nature of variables identifying these factors are such as to make impossible any but subjective judgments as to their possible similarities.

The present study was designed to help clarify the personality trait-rating domain. The goal was to isolate meaningful and relatively independent trait-rating factors which are universal enough to appear in a variety of samples, and which are not unduly sensitive to the rating conditions or situations.

METHOD

Eight intercorrelation matrices were factored and rotated orthogonally to approximate simple structure.² The matrices were selected in such a way that differences due to the traits rated would be minimized, while differences in the type of subjects, raters, and situations would be maximized. None of the analyses were carried out "blind" (without identification of the variables), nor were they made independently of one another. The goal was to rotate the separate factor matrices into similar structure while at the same time following accepted principles of rotation and arriving at simple structure.

For comparison purposes, one of the solutions was redetermined in a completely objective manner by subjecting the centroid factors to a varimax rotational program on an IBM 650 computer.

The trait variables entering into each analysis were among the 35 developed by Cattell (1947), who used as a basis the comprehensive list of adjectives originally identified by Allport & Odbert (1936) as describing human behavior. Each trait is bipolar, with each pole defined by a short group of adjectives or phrases. These traits are believed especially appropriate for an investigation of the trait-rating domain since the method by which they were developed led to some assurance that they are representative of the entire personality area. The bipolar names of these traits appear in Tables 1-6, below. For their defining adjectives or phrases the reader is referred to Cattell (1947), Fiske (1949), or Tupes (1957).

Three of the intercorrelation matrices are based on Air Force Officer Candidate School subjects who rated each other in various sized groups. One analysis is based on Air Force field grade officers (majors and a few lieutenant colonels) who rated each other while students at the Air Force Command and Staff School. Two analyses are rerotations of analyses published by Cattell (1947, 1948) in which the subjects are male and female college students. The two final analyses are based on two of Fiske's (1949) intercorrelation matrices of ratings of first-year graduate students in clinical psychology. In the first of these, ratings were obtained from peers; in the second, ratings were obtained from experienced clinical psychologists and psychiatrists.

² Six of these analyses appear in an earlier report (Tupes & Christol, 1958).

All groups of subjects and raters are described below. Briefly, they differ in length of acquaintanceship from three days to a year or more; in kind of acquaintanceship from assessment programs to a military training course to a fraternity house situation; in type of subject from airmen with only a high school education to male and female undergraduate students to first-year graduate students; and in type of rater from very naive persons to clinical psychologists or psychiatrists with years of experience in the evaluation of personality. It would appear that any factors common to all of these groups would have a wide range of generality both in terms of type of subject and type of rating situation.

DESCRIPTION OF THE EIGHT STUDIES

STUDY A. OCS 790-CASE SAMPLE

The subjects were 790 male graduates of OCS Classes 49B, 50A, 50B, 50C, 51B, and 51D. The earliest class, 49B, was graduated in December 1949; the latest, 51D, was graduated in December 1951. All candidates in each class had been selected from a much larger number of applicants (selection ratio about ten applicants for each vacancy) on the basis of a board interview, a biographical inventory designed to measure leadership characteristics, and differential credit for completion of more than the required minimum of two years of college. For applicants on active duty in an enlisted status, an evaluation form completed by the applicant's commanding officer was also considered. The average age was 23.6 years, with a standard deviation of 1.5 and a range of from 20.5 to 26.5 years. The average education was 3.6 years of college, with a standard deviation of 0.6 and a range of from 2 to 6 years. Distributions on both variables were decidedly skewed toward the lower end. Slightly over half of each class came from an enlisted status, with the others selected for OCS directly from civilian life.

Each OCS class was divided at the start of training into flights of from 25 to 30 candidates each. Each flight lived together in one dormitory, ate as a flight, and attended classes and drill as a flight. In fact, nearly all of each candidate's time was spent with his flight, and he soon became intimately acquainted with each of his fellow flight members. It was the well-organized OCS flight which constituted the rating group in the present study. Each candidate rated all his fellow flight members and was in turn rated by all his fellow flight members on 30 of the 35 Cattell traits. Each rater was required to pick one-third of the group as best described by the definition at each end of each bipolar trait.

Lengths of acquaintanceship at time of rating varied from as little as three weeks for one class to one year in another (this class rated each other six months after graduation from OCS at the end of an on-the-job training period at Lackland Air Force Base).

Product-moment intercorrelation matrices of the 30 traits were computed for each class separately. A final matrix was then obtained by taking the median correlation between each pair of traits in the separate class matrices. Eight factors were extracted from this matrix using the complete centroid method, and rotated to orthogonal simple structure.

STUDY B. OCS3-DAY ASSESSMENT SAMPLE

The subjects were 125 male officer candidates in OCS Class 55B, whose ages ranged from 20½ through 27. A little more than half had no college training; about a fifth had some college; and about a fifth were college graduates. All had some previous Air Force enlisted service ranging from one year to seven, with a median of 2½ years. The majority were planning on an Air Force career and all had been required to sign a contract for three years of commissioned service after graduation from OCS. All had been screened on a measure of general learning ability--the Officer Quality composite of the Air Force Officer Qualifying Test. Eighty-five per cent of the class had OQ scores as high as the upper 10% of the general population of young males and as the upper 40% of college freshmen.

Ratings were obtained at the end of a three-day assessment program just prior to the start of OCS. Rating groups consisted of 12 candidates, six of whom had observed each other in an intensive series of group and individual performance tests, and six of whom had only shared a barrack floor and dining table with the other six. Each rater was required to pick the four subjects who were best described by each end of the bipolar trait.

Five multiple group factors (corresponding to the five found in Study A) were extracted, along with three centroids. All eight factors were rotated to simple structure.

STUDY C. OCS END-OF-TRAINING ASSESSMENT SAMPLE

These are the same subjects who were used in Study B. At the end of the assessment, the groups were re-formed into OCS flights of from 15 to 20 candidates each. No two flight members had been members of the same assessment group. Near the end of the six-months OCS course, members of each flight rated each other on the 30 traits. Raters were asked to pick the third who were best described by each end of each bipolar trait. These ratings, although based on the same subjects, were entirely independent of the ratings analyzed in Study B.

Five multiple-group and three centroid factors were extracted from these data and rotated to simple structure.

STUDY D. COMMAND AND STAFF SCHOOL SAMPLE

The subjects were 500 students in the Air Force Command and Staff School Class of 1958. These officers had been screened originally on about the same basis as the OCS samples. However, at the time the trait ratings were obtained the average Command and Staff School officer was about 15 years older and had approximately 15 more years of military experience than the average OCS subject. Nearly all of the officers rated held the rank of major, although the sample included a few holding the rank of lieutenant colonel.

Ratings on 30 of the bipolar traits were obtained on these subjects after they had been in attendance at the Command and Staff School about two months. Each rating group was composed of from 12 to 14 officers who attended all classes as a unit. Only a third of each group served as raters; these rated all members of the group by selecting the four subjects in their seminar group who were best described by each pole of each trait.

Only five multiple-group factors (and no centroids) were extracted and rotated to simple structure. However, at a later time factors were extracted from the intercorrelation matrix by the complete centroid method and rotated on an IBM 650 computer using the varimax program.

STUDY E. CATTELL'S MALE UNIVERSITY SAMPLE

Subjects were 133 male university students with an average age of 20 years. Some were returning veterans. Ratings on 35 bipolar traits were obtained in groups of 17 men, all of whom lived together in fraternity houses or dormitories. Each rater rated all members of his group on each trait as below average, average, or above average on each trait, with a suggested distribution of $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{1}{4}$ for the three categories. For a complete description of this sample see Cattell (1947).

The intercorrelation matrix³ was factored and rotated twice. In one instance, eight centroid factors were extracted and rotated; in the second case, five multiple-group factors and three centroid factors extracted from the resulting residual matrix were rotated. Only the latter solution is reported, since the solution based upon the centroid extractions was discovered to contain errors introduced by the graphic rotational process.

³ Made available through the courtesy of Professor Raymond B. Cattell and reproduced in the Appendix, Table E1, with his permission.

STUDY F. CATTELL'S FEMALE UNIVERSITY SAMPLE

The subjects were 140 female university students. Ratings on these students were collected from their peers (all women) at the same time and in the same manner as in Study E. This sample is more completely described by Cattell (1948).

Since this was the only female sample studied, it was considered desirable to include several more factors in the analysis than might reasonably be expected to exist. Therefore 12 factors were rotated to simple structure; five of these were orthogonalized multiple-group factors and the other seven were centroids extracted from the residual matrix.⁴

STUDY G. FISKE'S TEAMMATES' RATINGS OF GRADUATE STUDENTS

The subjects were 128 male graduate students in clinical psychology who participated in an intensive assessment program during the summer before they started their graduate training. Their median age was 26, nearly all were veterans, and nearly all had World War II experience as military psychologists. During the week-long assessment, they ate, roomed, and took their recreation together. Twenty-four trainees were assessed each week and were split arbitrarily into groups of four who participated in a series of situational tests. At the end of the week, each subject rated himself and the other three members of his group on a series of variables, including 22 bipolar personality traits. Ratings were made on an eight-point scale. The three ratings made on each subject by his three teammates were summed to obtain the rating scores used in this study. For a complete description of the sample, the variables, and the rating procedure, see Fiske (1949).

Five multiple-group factors and three centroid factors were extracted from the correlation matrix.

STUDY H. FISKE'S STAFF MEMBERS' RATINGS OF GRADUATE STUDENTS

These subjects were the same as those of Study G. The same rating variables and rating scales were used except that staff members were asked to normally distribute their ratings on each trait. The raters were three assessment staff members assigned to each group of four subjects, and the rating scores were the sum of the ratings made by these individuals. Each staff member was a clinical psychologist (a few were psychiatrists) with years of experience. The raters had not only intensively observed each subject during a period of one week but in addition had the results of ten objective tests, four projective tests, a biographical inventory, an autobiography, and the write-ups of three interviews. The staff ratings were made without knowledge of the teammates' ratings.

Five multiple-group and three centroid factors were extracted and rotated to approximate orthogonal simple structure.

RESULTS

In each analysis five fairly strong rotated factors emerged. In the four studies involving Air Force samples and the two Fiske samples, all but the five strong factors were residualized (e.g., none of the residualized factors had loadings on any trait variable above an arbitrary .30 level). In the analysis of Cattell's male sample, two factors were residualized, and a weak factor involving primarily an intelligence test was defined. In Cattell's female sample, what had been identified as the fifth factor in the other analyses split into two factors. Both of these factors are reported for comparison purposes.

⁴ It is the authors' opinion that introduction of the additional factors into the rotational process reduced the clarity of the final solution and greatly increased the effort necessary to arrive at a reasonably good simple structure. It also led to excessively high communalities, undoubtedly as a result of the error variance reflected in the excess factors.

The five factors are reported in Tables 1 through 5. To save space and to make comparisons easier, each factor loading is presented to only one decimal space (e.g., .6).⁵ In each table, the trait rating variables are listed in the first column, grouped together in accordance with the factor to which they make the highest contribution. Thus the first group are those variables defining Factor I, the second group are those defining Factor II, etc. Each of the other columns shows the loadings of each variable on the appropriate factor in each of the eight studies. These columns are labeled A through H to correspond with the letters assigned to each sample above. Traits not rated in any particular study are so indicated by an X in the appropriate column.

FACTOR I: SURGENCY

Factor I appears to be that labeled by Cattell (1947, 1948) and French (1953) as Surgency and by many other investigators as Extroversion. It is best defined by the traits Talkativeness, Frankness, Adventurousness, Assertiveness, Sociability, Energetic, Composed, Interest in Opposite Sex, and Cheerfulness. It appears to be a true bipolar factor with negative loadings (.3 or greater) obtained for the traits of Emotional Maturity, Mildness, Kindliness, Conventionality, and Calmness.

TABLE 1. Loadings on Recurrent Factor I from Eight Analyses

Trait Variable		Analysis							
No.	Name	A	B	C	D	E	F	G	H
14	Silent vs Talkative	.8	.7	.7	.8	.8	.8	.9	.9
28	Secretive vs Frank	.8	.7	.8	.8	.7	.7	.8	.5
16	Cautious vs Adventurous	.8	.7	.8	.8	.7	.7	.7	.6
3	Submissive vs Assertive	.7	.7	.8	.7	.4	.6	.7	.8
29	Self-contained vs Sociable	.7	.7	.6	.5	.7	.7	X	X
7	Languid, Slow vs Energetic	.7	.7	.7	.7	.5	.9	.8	.7
33	Shy, Bashful vs Composed	X	X	X	X	.6	.7	X	X
35	Slight vs Marked Interest in Opposite Sex	X	X	X	X	.5	.4	.6	.4
32	Depressed vs Cheerful	X	X	X	X	.5	.6	.7	.6
10	Spitful vs Goodnatured	.1	.0	.1	.1	.1	.1	.0	.0
20	Jealous vs Not So	-.1	-.1	.1	.1	-.2	-.1	X	X
22	Demanding vs Emotionally Mature	.1	-.5	.1	-.4	-.3	-.1	X	X
13	Self-willed vs Mild	-.3	-.5	-.2	-.5	-.3	-.2	X	X
1	Obstructive vs Cooperative	.2	.1	.1	-.2	.4	.4	.2	-.1
9	Suspicious vs Trustful	.1	.1	.2	.1	.0	.1	.1	.0
21	Rigid vs Adaptable	.2	.2	.4	.1	.3	.2	.3	.3
17	Hard, Stern vs Kindly	.3	.5	.6	.3	.1	.1	X	X
5	Cool, Aloof vs Attentive to People	.5	.4	.3	.4	.5	.7	.5	.6
31	Attention Getting vs Self-sufficient	X	X	X	X	-.5	-.5	X	X
18	Relaxed, Laidback vs Insistently Orderly	-.2	-.1	-.2	-.2	-.1	-.1	X	X
4	Filivious vs Responsible	.0	.0	.0	.1	-.1	.0	-.4	-.3
25	Unscrupulous vs Conscientious	-.2	-.2	-.2	-.2	-.3	-.2	-.4	-.3
15	Quitting vs Persevering	.1	.2	.3	.1	-.2	.1	X	X
23	Unconventional vs Conventional	.4	.5	.4	.4	.3	.3	X	X
26	Neurotic vs Not So	.2	.1	.4	.2	.0	.0	X	X
24	Worrying, Anxious vs Placid	.1	.0	.3	.1	.1	.0	-.2	.1
6	Easily Upset vs Poised, Tough	.3	.5	.5	.4	.0	.2	.0	.3
12	Hypochondriacal vs Not So	.1	.1	.3	.2	.0	-.1	X	X
11	Emotional vs Calm	-.3	-.3	.0	-.5	-.4	-.4	X	X
2	Changeable vs Emotionally Stable	.0	.1	.1	-.2	-.3	.0	.1	-.2
17	Dependent vs Self-sufficient	X	X	X	X	X	X	-.1	.2
8	Bourish vs Intellectual, Cultured	.0	.1	.2	.1	.6	.0	.2	.2
27	Lacking Artistic Feeling vs Esthetically Fastidious	.0	-.1	.1	X	.2	.0	X	X
34	Practical, Logical vs Imaginative	X	X	X	.1	.1	.1	.3	.3
19	Clumsy, Awkward vs Polished	.1	.0	.2	.0	.0	.0	.0	-.1
20	Immature vs Independent-Minded	.4	.6	.6	.6	.1	.1	.3	.3

Note.—A null entry of X denotes variable not used in study.

⁵ The intercorrelation matrices, communalities estimates, and both original and final rotated factor matrices are presented in Appendix A-H.

FACTOR III: AGREEABLENESS

This factor corresponds quite closely to that called Agreeableness by French (1953). It, too, is a bipolar factor, defined on the positive end by the variables Goodnatured, Not Jealous, Emotionally Mature, Mildness, Cooperativeness, Trustfulness, Adaptability, Kindliness, Attentiveness to People, and Self-sufficiency (as opposed to Attention-Getting). Traits loaded negatively on Factor II include Assertiveness and to a lesser extent Talkativeness and Orderliness.

TABLE 2. Loadings on Recurrent Factor II from Eight Analyses

Trait Variable											
No.	Name	Analysis	A	B	C	D	E	F	G	H	
14	Silent vs Talkative		.0	-.2	-.1	-.2	-.1	-.1	-.2	.1	
28	Secretive vs Frank		.1	.1	.3	.0	-.2	-.2	.2	.5	
16	Cautious vs Adventurous		.1	.0	.1	-.2	.1	.0	.1	.2	
3	Submissive vs Assertive		-.4	-.4	-.3	-.4	-.6	-.5	-.4	-.4	
29	Self-contained vs Sociable		.2	.1	.2	.1	.0	.1	X	X	
7	Languid, Slow vs Energetic		.0	.0	.0	.0	.2	.1	.0	.1	
33	Shy, Bashful vs Composed		X	X	X	X	-.1	.0	X	X	
35	Slight vs Marked Interest in Opposite Sex		X	X	X	X	.0	-.1	.0	.2	
32	Depressed vs Cheerful		X	X	X	X	.3	.4	.3	.4	
10	Spiteful vs Goodnatured		.8	.7	.8	.7	.7	.8	.7	.8	
20	Jealous vs Not So		.8	.7	.8	.6	.6	.8	X	X	
22	Demanding vs Emotionally Mature		.8	.6	.8	.6	.7	.8	X	X	
13	Self-willed vs Mild		.7	.6	.7	.6	.6	.8	X	X	
1	Obstructive vs Cooperative		.7	.5	.7	.6	.6	.6	.6	.7	
9	Suspicious vs Trustful		.6	.5	.7	.6	.6	.7	.6	.7	
21	Rigid vs Adaptable		.6	.4	.7	.4	.6	.6	.4	.7	
17	Hard, Stern vs Kindly		.6	.4	.5	.5	.7	.7	X	X	
5	Cool, Aloof vs Attentive to People		.7	.5	.6	.5	.3	.7	.4	.5	
31	Attention-Getting vs Self-sufficient		X	X	X	X	.4	.6	X	X	
18	Relaxed, Indolent vs Insistently Orderly		-.3	-.2	-.2	-.1	-.1	-.1	X	X	
4	Firreless vs Responsible		.3	.5	.4	.2	.3	.4	.0	.2	
25	Unscrupulous vs Conscientious		.5	.5	.6	.4	.4	.6	.3	.4	
15	Quitting vs Persevering		.3	.2	.4	.0	-.1	.0	X	X	
23	Unconventional vs Conventional		.2	.3	.4	.3	.2	.3	X	X	
26	Neurotic vs Not So		.3	.1	.4	.3	.2	.3	X	X	
24	Worrying, Anxious vs Placid		.3	.3	.5	.1	.0	.2	.5	.3	
6	Easy, Upset vs Poised, Tough		.1	-.1	.2	.0	.0	-.1	.1	.1	
12	Hypochondriacal vs Not So		.4	.1	.4	.2	.1	.4	X	X	
11	Emotional vs Calm		.4	.3	.6	.3	.2	.4	X	X	
2	Changeable vs Emotionally Stable		.5	.6	.6	.3	.2	.6	.4	.2	
37	Dependent vs Self-sufficient		X	X	X	X	X	X	.2	.0	
8	Boorish vs Intellectual, Cultured		.2	.2	.3	.1	.1	.3	.0	.1	
27	Lacking Artistic Feeling vs Enthetically Fastidious		.1	.0	.0	X	.0	-.1	X	X	
24	Practical, Logical vs Imaginative		X	X	X	.0	.1	.1	.1	.0	
19	Clumsy, Awkward vs Polished		.2	.2	.3	.3	.1	.3	.3	.2	
30	Immature vs Independent-Minded		.1	-.1	.1	-.1	.0	.1	-.1	-.3	

Note.—A cell entry of X denotes variable not used in study.

FACTOR III: DEPENDABILITY.

The primary definers of this factor are Orderliness, Responsibility, Conscientiousness, Perseverance, and Conventionality, with several other variables (Cooperativeness, Mildness, and Emotional Stability) having positive loadings above .3. Practically all definers of Factor I are loaded negatively on this factor, as are Trustfulness, and Imaginative. The factor in many respects is like that labeled by French (1953) as Dependability or by Fiske (1949) as Conformity. It appears to be quite similar to the old "w" or Will factor found by Webb (1915).

TABLE 3. Loadings on Recurrent Factor III from Eight Analyses

Trait Variable		A	B	C	D	E	F	G	H
No.	Name								
14	Silent vs Talkative	-.2	-.3	-.2	-.2	-.3	-.3	-.0	-.1
28	Secretive vs Frank	-.2	-.3	.0	-.1	-.1	-.2	.0	.2
16	Cautious vs Adventurous	-.4	-.1	-.2	-.2	-.4	-.5	-.4	.1
3	Submissive vs Assertive	-.1	-.3	-.2	-.1	-.1	.0	.0	.1
29	Self-contained vs Sociable	-.4	-.4	-.2	-.4	-.4	-.3	X	X
7	Languid, Slow vs Energetic	.3	.0	.1	-.1	-.2	.0	-.1	.0
33	Shy, Bashful vs Composed	X	X	X	X	-.3	-.2	X	X
35	Slight vs Marked Interest in Opposite Sex	X	X	X	X	-.2	-.3	-.4	-.4
32	Depressed vs Cheerful	X	X	X	X	-.4	-.3	-.1	.0
10	Spiteful vs Goodnatured	.0	.0	.3	.0	.1	-.2	.0	.4
20	Jealous vs Not So	.0	.0	.2	.1	.0	.0	X	X
22	Demanding vs Emotionally Mature	.2	.1	.3	.2	.2	.2	X	X
13	Self-willed vs Mild	.2	.1	.4	.3	.3	.1	X	X
1	Obstructive vs Cooperative	.4	.5	.5	.2	.3	.3	.2	.3
9	Suspicious vs Trustful	.1	.2	.1	.2	.0	.0	.1	.3
21	Rigid vs Adaptable	-.3	-.2	-.2	-.2	-.3	-.3	-.1	.1
17	Hard, Stern vs Kindly	.0	-.1	.2	.1	.1	-.1	X	X
5	Cool, Aloof vs Attentive to People	.1	-.1	.5	.1	.0	.0	.2	.1
31	Attention Getting vs Self-sufficient	X	X	X	X	.4	.1	X	X
18	Relaxed, Indolent vs Insistently Orderly	.7	.4	.5	.5	.6	.7	X	X
4	Frivolous vs Responsible	.6	.4	.6	.6	.6	.6	.7	.7
25	Unscrupulous vs Conscientious	.5	.5	.6	.6	.4	.3	.6	.7
15	Quitting vs Persevering	.6	.3	.4	.5	.4	.7	X	X
23	Unconventional vs Conventional	.6	.4	.6	.4	.5	.5	X	X
26	Neurotic vs Not So	.1	.0	.3	.1	.0	.1	X	X
24	Worrying, Anxious vs Placid	-.1	.0	-.1	-.1	-.2	-.1	.0	-.1
6	Easily Upset vs Poised, Tough	.0	-.1	-.1	.0	-.1	.1	.1	.1
12	Hypochondriacal vs Not So	.1	.1	.0	.0	.1	.0	X	X
11	Emotional vs Calm	.2	.2	.1	.3	.2	.2	X	X
2	Changeable vs Emotionally Stable	.2	.3	.3	.3	.2	.4	.4	.4
17	Dependent vs Self-sufficient	X	X	X	X	X	X	.1	.2
8	Boorish vs Intellectual, Cultured	.1	.0	.0	.2	.3	.1	.3	.0
27	Lacking Artistic Feeling vs Esthetically Fastidious	.1	.1	.2	.4	.0	.1	X	X
34	Practical, Logical vs Imaginative	X	X	X	-.4	-.1	-.5	.1	.0
19	Clumsy, Awkward vs Polished	.1	.2	.1	.1	.1	.3	.2	.2
30	Immature vs Independent-Minded	.0	.0	.2	.1	.0	.1	.2	.2

Note.—A cell entry of X denotes variable not used in study.

ERRATUM

Tupes, E.C. & Christel, R.E. *Recurrent personality factors based on trait ratings.*
Luckland Air Force Base, Texas: Personnel Laboratory, Aeronautical Systems
Division, May 1961. (Technical Report ASD-TR-61-97)

Page 8, line 5

For . . . loaded negatively on this factor, as are Trustfulness, and
Imaginative.

Read . . . loaded negatively on this factor, as are Adaptability and
Imaginative.

FACTOR IV: EMOTIONAL STABILITY

The inverse of this factor seems to be that listed by French (1953) as Emotionality. It is loaded highest by Not Neurotic, Placid, Poised, Not Hypochondriacal, Calm, Emotionally Stable, and Self-sufficient (as opposed to Dependent). Secondary definers of the factor are Lack of Jealousy, Emotional Maturity, Cooperativeness, Trustfulness, Adaptability, Responsibility, Perseverance, and Independent-Mindedness. Kindliness has a significant negative loading on this factor.

TABLE 4. Loadings on Recurrent Factor IV from Eight Analyses

Trait Variable		Analysis							
No.	Name	A	B	C	D	E	F	G	H
14	Silent vs Talkative	-.2	-.1	-.4	-.1	.0	-.2	.2	.0
28	Secretive vs Frank	.1	.1	-.1	.0	-.1	.0	.0	.0
16	Cautious vs Adventurous	.2	.4	.1	.1	.1	.2	.2	.2
3	Submissive vs Assertive	.2	.4	.1	.2	.1	.2	.1	.2
29	Self-contained vs Sociable	-.1	.1	-.2	-.1	-.1	-.3	X	X
7	Languid, Slow vs Energetic	.3	.2	.1	.1	.4	.1	-.2	-.4
33	Shy, Bashful vs Composed	X	X	X	X	.2	.2	X	X
35	Slight vs Marked Interest in Opposite Sex	X	X	X	X	-.1	-.1	.2	.3
32	Depressed vs Cheerful	X	X	X	X	.1	.0	.3	.4
10	Spiteful vs Goodnatured	.2	.2	.2	.1	.0	-.2	.1	.1
20	Jealous vs Not So	.5	.3	.4	.3	.4	.1	X	X
22	Demanding vs Emotionally Mature	.4	.3	.2	.2	.3	.1	X	X
13	Self-willed vs Mild	.3	.1	.2	.0	.1	-.2	X	X
1	Obstructive vs Cooperative	.3	.4	.3	.1	.1	-.1	.1	.1
9	Suspicious vs Trustful	.6	.5	.4	.5	.4	.3	.1	.3
21	Rigid vs Adaptable	.4	.4	.3	.0	.2	.1	.3	.3
17	Hard, Stern vs Kindly	-.4	-.3	-.4	-.4	-.3	-.5	X	X
5	Cool, Aloof vs Attentive to People	.1	.0	-.1	-.1	-.1	-.1	.0	.1
31	Attention Getting vs Self-sufficient	X	X	X	X	.4	.1	X	X
18	Relaxed, Indolent vs Insistently Orderly	.0	.0	.0	-.1	.3	.0	X	X
4	Frivolous vs Responsible	.5	.2	.4	.2	.3	.1	.0	.0
25	Unscrupulous vs Conscientious	.2	.2	.2	.1	.0	-.2	.0	-.1
15	Quitting vs Persevering	.4	.5	.4	.2	.4	.2	X	X
23	Unconventional vs Conventional	.1	-.2	.0	-.1	.0	-.4	X	X
26	Neurotic vs Not So	.7	.7	.5	.6	.7	.5	X	X
24	Worrying, Anxious vs Placid	.7	.7	.6	.7	.6	.8	.7	.8
6	Emotionally Upset vs Poised, Tough	.7	.5	.6	.5	.8	.7	.7	.8
12	Hypochondriacal vs Not So	.7	.6	.6	.5	.5	.5	X	X
11	Emotional vs Calm	.6	.5	.6	.4	.4	.5	X	X
2	Changeable vs Emotionally Stable	.6	.4	.6	.4	.4	.4	.2	.4
17	Dependent vs Self-sufficient	X	X	X	X	X	X	.4	.6
8	Rash vs Intellectual, Cultured	.2	.1	.2	.2	.3	.1	.2	.1
27	Lacking Artistic Feeling vs Esthetically Fastidious	.1	.1	.0	X	-.1	.0	X	X
14	Practical, Logical vs Imaginative	X	X	X	.1	-.3	-.4	.0	.0
19	Clumsy, Awkward vs Polished	.2	.1	.2	.2	.3	.0	.3	.6
30	Immature vs Independent-Minded	.5	.4	.5	.4	.5	.4	.3	.3

Note: A cell entry of X denotes variable not used in study.

FACTOR V: CULTURE

Factor V is the least clear of the five factors identified by the eight analyses. It appears to be similar to the factor labeled by French (1953) as Culture and by Fiske (1949) as the Inquiring Intellect. It is defined by the variables, Cultured, Esthetically Fastidious, Imaginative, Socially Polished, and Independent-Minded, with secondary loadings by Energetic, Poise, Emotional Stability, and all the variables in Factor III. It will be noted that loadings for two factors are shown under Column F. This is the analysis of the female college students, and in this sample only, Factor V split into two quite distinct subfactors. The first of these has a pattern of loadings quite similar to the Factor V found recurring throughout the studies. The second of these is defined by the variables Esthetically Fastidious, Socially Polished, and Interest in the Opposite Sex.

TABLE 5. Loadings on Recurrent Factor V from Eight Analyses

<u>Trait Variable</u>											
<u>No.</u>	<u>Name</u>	<u>Analysis</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>		<u>G</u>	<u>H</u>
								<u>V</u>	<u>VI</u>		
14	Silent vs Talkative		.0	-.2	-.2	.2	.0	-.1	-.1	.2	.1
28	Secretive vs Frank		.1	-.2	.0	.0	.2	.0	-.1	.2	.1
16	Cautious vs Adventurous		.1	-.2	.1	.1	-.1	.0	.1	.4	.1
3	Submissive vs Assertive		.3	.1	.0	.3	.2	.3	.1	.2	.2
29	Self-contained vs Sociable		.1	-.1	.0	.0	.1	-.2	.2	X	X
7	Languid, Slow vs Energetic		.5	.2	.4	.4	.3	.1	.1	.1	.1
33	Shy, Bashful vs Composed		X	X	X	X	.4	.3	.2	X	X
25	Slight vs Marked Interest in Opposite Sex		X	X	X	X	.0	-.2	.4	.2	.0
32	Depressed vs Cheerful		X	X	X	X	.1	-.2	.2	.1	-.1
10	Spiteful vs Goodnatured		.0	.0	.2	-.1	.1	.0	.0	.2	.0
20	Jealous vs Not So		.0	.0	.2	.0	-.2	.1	.0	X	X
22	Demanding vs Emotionally Mature		.1	.0	.2	.0	.1	.1	-.1	X	X
13	Self-willed vs Mild		.0	.1	.2	-.1	.1	.0	-.1	X	X
1	Obstructive vs Cooperative		-.1	.3	.3	.2	.3	.2	.1	.2	.0
9	Suspicious vs Trustful		.2	.2	.4	.0	.0	.0	.2	.2	-.2
21	Rigid vs Adaptable		.0	-.1	.1	-.1	-.2	-.2	.2	.5	.4
17	Hard, Stern vs Kindly		-.2	.0	.1	-.2	-.1	.0	.0	X	X
5	Cool, Aloof vs Attentive to People		.2	.0	.3	.1	.4	-.1	-.2	.3	.0
31	Attention Getting vs Self-sufficient		X	X	X	X	-.2	.0	-.1	X	X
18	Relaxed, indolent vs Insistently Orderly		.3	.6	.6	.3	.4	.2	.0	X	X
4	Frivolous vs Responsible		.3	.4	.3	.4	.2	.5	-.1	.0	.2
25	Unscrupulous vs Conscientious		.3	.4	.4	.3	.3	.3	-.2	.2	.1
15	Quitting vs Persevering		.4	.2	.4	.5	.4	.5	-.1	X	X
23	Unconventional vs Conventional		.1	.2	.3	.0	-.3	-.1	.0	X	.3
26	Neurotic vs Not So		.1	.1	.2	.1	-.2	-.2	.0	X	X
24	Worrying, Anxious vs Placid		.1	-.1	.1	.0	.0	.0	.1	.1	.0
6	Easily Upset vs Poised, Tough		.4	.2	.3	.4	.0	.4	.1	.1	.1
12	Hypochondriacal vs Not So		.1	.0	.1	-.2	-.1	-.1	.0	X	X
11	Emotional vs Calm		.1	.2	.3	.1	.1	.1	.1	X	X
2	Changeable vs Emotionally Stable		.2	.3	.3	.5	.5	.3	.0	-.2	-.3
37	Dependent vs Self-sufficient		X	X	X	X	X	X	X	.4	.3
8	Boorish vs Intellectual, Cultured		.8	.8	.7	.8	.6	.8	-.1	.6	.8
27	Lacking Artistic Feeling vs Esthetically Fastidious		.8	.8	.9	X	.5	.1	.6	X	X
34	Practical, Logical vs Imaginative		X	X	X	.5	.5	.2	.2	.7	.7
19	Clumsy, Awkward vs Polished		.8	.8	.8	.6	.6	.5	.5	.6	.4
30	Immature vs Independent-Minded		.5	.4	.4	.6	.5	.8	-.1	.4	.6

Note.—A cell entry of X denotes variable not used in study.

DISCUSSION

The results of these analyses clearly indicate that differences in samples, situations, raters, and lengths and kinds of acquaintanceship have little effect on the factor structure underlying ratings of personality traits. Statistical tests are not needed to indicate the similarity of corresponding factors from one analysis to another. There can be no doubt that the five factors found throughout all eight analyses are recurrent.

In evaluating the results of a series of factor solutions, such as those presented in Tables 1 through 5, it is natural for the reader to wonder to what extent the results might reflect biases on the part of the authors. There is little doubt but that the words "simple structure" have been used very loosely by many analysts, and it is also undoubtedly true that a preconceived solution can be fabricated through a little "forcing" during the rotational process.

The first factors rotated were those from the 720-case OCS sample described in Study A. While these rotations were not made blind, they were made with no preconceived notions as to how the final solution should appear. Even so, there were certain "choice points" during the rotational process at which somewhat arbitrary decisions were made. These are the same types of decisions which are familiar to all who have participated in orthogonal graphical rotations. In the main they are of two types: (a) those concerning final positioning of reference axes when there was a choice of favoring one or the other of two factors or of balancing the two; and (b) those concerning whether to attempt the buildup or residualization of weak factors introduced into the rotational system. The rules of simple structure do not provide clear guidance in either event, and the rotator is generally left with the job of imposing some subjectivity in deciding which alternatives best fit the criteria.

The choice on final positioning of the reference axes is probably not too critical, since it generally affects only the relative magnitude of the loadings on the two factors considered and does not greatly affect the pattern of factor definers. The decision concerning the buildup or residualization of weak factors is considerably more serious, and whether the choice goes one way or the other can affect both the number and nature of factors reported.

Individuals seem to arrive at their decisions in many different ways. Generally the final positioning of reference axes is subjective, although it many times is tempered with reason. In regard to the rotation of weak factors, some prefer to be guided by one or more of the twenty odd mathematical criteria which propose to estimate the true rank of the original intercorrelation matrix. Unfortunately, the various criteria often do not agree, even when the beginning communality estimates are identical. Other individuals prefer to over extract and fight the battle on the rotation board. If a weak factor can be built up into something they interpret as meaningful they accept it; otherwise they make a strong attempt at residualization.

In the current study the final positioning of reference axes in Study A was made arbitrarily within the general bounds of acceptable simple structure. Once these decisions had been made, the tendency was to make choices in the same direction in later analyses--still staying within the bounds of simple structure. A variety of criteria were considered in making decisions concerning the introduction and rotation of weak factors. These included several statistical criteria relating to maximum likelihood, the results reported by past investigators analyzing the same data, the results of attempted buildup and residualizations of such factors, and, admittedly, a little subjective judgment. The actual number of factors rotated varied from only five in the Command and Staff School analysis to 12 in the rotation of the Cattell women's sample. In every sample except one there appeared to be five relatively strong and recurrent personality factors and nothing more of any consequence. In the Cattell women's sample, the fifth factor appears to have split into two related factors.

Subsequent to completion of all eight analyses, a program became available for accomplishing analytic rotations by means of the IBM 550 computer using the normal varimax criterion (Kaiser, 1958). There are good indications that this completely objective analytical rotational procedure will

not only save many hours of labor, but will bring considerably more rigor to what has thus far been a rather loose area. Perhaps the most encouraging note is that the normal varimax solution appears to be invariant under changes in the composition of a test battery. Thus submitting one or more of the analyses in the current paper for analytic rotation using the normal varimax criterion would serve at least two purposes: (a) it would remove (or confirm) any doubts the reader (or authors) might have concerning the biases involved in the reported solutions, and (b) it would produce factors likely to be invariant under changes in the composition of the trait-rating battery.

The Command and Staff School sample (Study D) was selected for analytic rotation because in the authors' judgment it was the one most subject to criticism. This is because all the factors were extracted by the multiple-group method and only five factors were introduced into the rotational process.

In order to maximize the independence of the new solution, only the intercorrelation matrix was sent to the statistical services section, with instructions to extract eight centroid factors and obtain a normal varimax solution. The variables in this matrix were not identified. It was the decision of the consultants in the statistical services section to rotate only six factors, the last of which was residualized by the analytic procedure.⁶ The five identifiable factors are reported in Table 6 along with the corresponding solution obtained via graphic rotations. It can be seen that the two solutions are for all practical purposes identical. In every instance the loadings for the defining variables are exactly the same or differ by only .1. No loading differs by more than .2, even among the nondefining variables.

In many ways it seems remarkable that such stability should be found in an area which to date has granted anything but consistent results. Undoubtedly the consistency has always been there, but it has been hidden by inconsistency of factorial techniques and philosophies, the lack of replication using identical variables, and disagreement among analysts as to factor titles. None of the factors identified in this study are new. They have been identified many times in previous analyses, although they have not always been called by the same names.

Even so, it might surprise some to find the same factors emerging from such a wide variety of samples and conditions. One interpretation is that there are only five fundamental concepts running through the 35 trait names used in these studies. If the common variance in these 35 bipolar traits reflect only five fundamental meaning concepts, then it is reasonable to expect these concepts to correspond to the factors identified in any sample to which the 35 traits are applied.

It should be noted that there may exist little relationship between the magnitude of intercorrelations obtained among trait-rating variables and the level of inter-rater agreement concerning which traits apply to given individuals being rated. Thus it would be possible to identify very strong trait-rating factors having no practical utility. As indicated above, however, trait ratings based on the variables included in this study not only grant satisfactory inter-rater agreement coefficients, but are related to later meaningful criteria.

It is unlikely that the five factors identified are the only fundamental personality factors. There are quite likely other fundamental concepts involved among the Allport-Odbert adjectives on which the variables used in the present study were based. The 35 traits (or more accurately trait clusters) used in the present study represent the distillate drawn by Cattell from the interrelationships among some 175 traits which in turn were selected as representative of the Allport-Odbert adjectives. The communalities of the trait-rating variables in the various samples studied are on the whole quite sizable (averaging .60 to .85); however, for some traits they are as low as .4 or .5. Thus many of the traits have specific variances greatly in excess of their common variance. In many cases these specific variances would become common variances were other variables to be included in the analyses. Thus it is likely that other fundamental factors may be identified in future studies.

⁶One variable had a loading of .24 on the sixth factor; all other variables had loadings below .20.

TABLE 6. Comparison of Normal Varimax Solution
with that Obtained using Graphic Rotations

Trait Variable No. Name	I		II		III		IV		V	
	V	G	V	G	V	G	V	G	V	G
14 Silent vs Talkative	.9	.8	-.1	-.2	.0	-.2	.0	-.1	.1	.2
28 Secretive vs Frank	.8	.8	.1	.0	.0	-.1	.1	.0	.0	.0
16 Cautious vs Adventurous	.9	.8	-.1	-.2	-.1	-.2	.2	.1	.0	.1
3 Submissive vs Assertive	.7	.7	-.4	-.4	.0	-.1	.1	.2	.2	.3
29 Self-contained vs Sociable	.6	.5	.2	.1	-.4	-.4	-.1	-.1	.1	.0
7 Languid, Slow vs Energetic	.7	.7	.0	.0	.1	.1	.2	.1	.3	.4
10 Spiteful vs Goodnatured	-.1	.1	.8	.7	.0	.0	.2	.1	.0	-.1
20 Jealous vs Not So	-.2	-.1	.6	.6	.1	.1	.4	.3	.1	.0
22 Demanding vs Emotionally Mature	-.5	-.4	.5	.6	.1	.2	.3	.2	.1	.0
13 Self-willed vs Mild	-.6	-.5	.5	.6	.3	.3	.0	.0	-.1	-.1
1 Obstructive vs Cooperative	-.3	-.2	.7	.6	.1	.2	.1	.1	.3	.2
9 Suspicious vs Trustful	.0	.1	.5	.6	.1	.2	.5	.5	.2	.0
21 Rigid vs Adaptable	.0	.1	.5	.4	-.4	-.2	.1	.0	.1	-.1
17 Hard, Stern vs Kindly	-.3	-.3	.6	.5	.0	.1	-.3	-.4	-.2	-.2
5 Cool, Aloof vs Attentive to People	.3	.4	.6	.5	.1	.1	.0	-.1	.0	.1
18 Relaxed, Indolent vs Insistently Orderly	-.1	-.2	-.1	-.1	.5	.5	-.3	-.1	.4	.3
4 Frivolous vs Responsible	-.2	-.1	.2	.2	.7	.6	.2	.2	.3	.4
25 Unscrupulous vs Conscientious	-.2	-.2	.3	.4	.6	.6	.1	.1	.2	.3
15 Quitting vs Persevering	.1	.1	.0	.0	.6	.5	.1	.2	.4	.5
23 Unconventional vs Conventional	-.5	-.4	.2	.3	.4	.4	-.1	-.1	.0	.0
26 Neurotic vs Not So	.1	.2	.2	.3	.1	.1	.6	.6	.1	.1
24 Worrying, Anxious vs Placid	.0	.1	.0	.1	-.1	-.1	.7	.7	.2	.0
6 Easily Upset vs Poised, Tough	.3	.4	-.1	.0	.1	.0	.5	.5	.4	.4
12 Hypochondriacal vs Not So	.1	.2	.2	.2	.0	.0	.6	.5	-.1	-.2
11 Emotional vs Calm	-.6	-.5	.2	.3	.2	.3	.3	.4	.2	.1
2 Changeable vs Emotionally Stable	-.2	-.2	.2	.3	.3	.3	.4	.4	.5	.5
8 Boorish vs Intellectual, Cultured	.2	.1	.0	.1	.3	.2	.1	.2	.7	.8
34 Practical, Logical vs Imaginative	.1	-.1	.0	.0	.1	.0	.0	.1	.5	.5
19 Clumsy, Awkward vs Polished	.0	.0	.2	.3	.2	.1	.2	.2	.6	.6
30 Immature vs Independent-Minded	.4	.4	-.2	-.1	.3	.1	.3	.4	.5	.6

Note.—V = Varimax Solution, G = Graphic Rotations.

SUMMARY

The present study was designed to help clarify the personality trait-rating domain. The goal was to isolate meaningful and relatively independent trait-rating factors which are universal enough to appear in a variety of samples, and which are not unduly sensitive to the rating conditions or situations.

A total of 35 personality traits were selected as representative of the personality domain. Inter-correlations among these traits were obtained for eight samples. These samples differed in length of acquaintance from three days to a year or more; in kind of acquaintanceship from assessment

programs in a military training course to a fraternity house situation; in type of subject from airmen with only a high school education to male and female undergraduate students to first-year graduate students; and in type of rater from very naive persons to clinical psychologists and psychiatrists with years of experience in the evaluation of personality. Centroid or multiple-group factors were extracted from the intercorrelations and rotated orthogonally to simple structure. For one of the studies an independent solution was obtained in which analytic rotations were accomplished by an IBM 650 computer using Kaiser's normal varimax criterion.

In all solutions except one there appeared to be five relatively strong and recurrent factors and nothing more of any consequence. In one solution, based upon data from undergraduate women, the fifth factor split into two highly related factors. The solution obtained by analytic rotations using the normal varimax criterion was for all practical purposes identical to the corresponding solution obtained via graphic rotations to the simple structure criterion.

The five recurrent factors were labeled as (1) *Surgency*, (2) *Agreeableness*, (3) *Dependability*, (4) *Emotional Stability*, and (5) *Culture*.

While no claim is made by the authors that the five factors identified are the only personality dimensions, reasons are given in support of their fundamental nature and probable invariance.

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APPENDIX A: Study A Factor Analysis

TABLE A1. Inter correlations Among Trait Ratings from Officer Candidates

(OC's Closed: 492-512-510, M - 790)

[illegible]

Note. - Correlations estimated as the highest correlations in each row.

APPENDIX A (Continued)
TABLE A2. Loadings on Nine Centroid Factors from 790 Male Officer Candidates

Trait Variable												
No.	Name	I	II	III	IV	V	VI	VII	VIII	IX	X	
11	Silent vs Talkative	133	-667	1485	-179	217	-048	068	072	-055	792	
28	Secretive vs Frank	313	-599	1421	-031	165	-157	208	-084	-094	766	
14	Cautious vs Adventurous	107	-584	548	108	131	043	106	-042	031	852	
3	Subsissive vs Assertive	312	-786	174	229	174	-158	106	073	090	851	
29	Self-contained vs Sociable	288	-522	606	-124	035	061	-129	163	157	795	
7	Languid, Slow vs Energetic	716	-164	-064	-117	336	310	048	036	113	979	
10	Spiteful vs Goodnatured	612	371	178	-185	-085	-111	-051	-048	077	805	
20	Jealous vs Not So	625	513	332	051	-157	025	038	-062	-070	803	
22	Demanding vs Emotionally Mature	663	550	188	-114	-103	047	088	033	117	836	
13	Self-willed vs Mild	198	670	106	-121	-219	-114	-083	102	-051	812	
1	Cooperative vs Uncooperative	783	330	111	-281	135	-113	-096	-017	060	866	
9	Constructive vs Trustful	830	281	181	098	038	071	-068	074	016	827	
21	Rigid vs Adaptable	532	135	563	140	-178	169	026	-103	018	711	
17	Hard, Stern vs Kindly	-111	190	381	-133	-211	075	-139	-106	-047	667	
5	Cool, Aloof vs Attentive to People	716	-083	365	-368	044	-175	045	-070	114	857	
18	Relaxed, Indolent vs Insistently Orderly	089	076	-713	-224	215	060	055	174	-205	755	
4	Frivolous vs Responsible	734	223	-392	-098	163	-059	093	-205	104	552	
25	Unscrupulous vs Conscientious	600	171	-298	-275	-043	-115	052	-056	-040	769	
15	Quitting vs Persevering	787	115	-410	-111	152	-117	113	-113	-112	888	
23	Unconventional vs Conventional	185	341	-381	-266	132	218	-387	086	116	639	
26	Neurotic vs Not So	732	133	115	250	138	133	126	050	-035	701	
24	Worrying, Anxious vs Placid	647	096	172	126	-055	082	065	130	161	698	
6	Easily Upset vs Poised, Tough	767	-209	-058	180	-055	-127	096	108	096	826	
12	Hypochondriacal vs Not So	712	218	121	298	024	113	038	074	-088	689	
11	Emotional vs Calm	520	598	-127	255	-169	-104	100	111	169	806	
2	Changeable vs Emotionally Stable	850	334	-072	089	017	-042	-066	023	039	855	
8	Boorish vs Intellectual, Cultured	655	-178	-306	-133	-413	118	066	-120	-056	779	
27	Lacking Artistic Feeling, vs Esthetically Fastidious	174	-218	-356	-211	-373	228	065	131	-119	679	
19	Clumsy, Awkward vs Polished	725	-139	-217	-176	-363	126	039	142	065	787	
30	Immature vs Independent-Minded	728	-330	-112	214	-085	-035	160	-190	130	801	

APPENDIX A (Continued)
TABLE A3 Loadings of Nine Rotated Factors for 780 Male Officer Candidates

Test Variables		I	II	III	IV	V	VI	VII	VIII	IX ^a	X ²
No.	Sign										
14	BLISS vs Talkative	822	000	-231	-204	000	001	060	058	-055	783
15	Assertive vs Frank	822	000	-231	055	063	-012	-140	-084	-084	761
16	Cautious vs Adventurous	824	100	-351	187	066	046	075	-035	031	861
17	Self-reliance vs Assertive	716	-184	-087	167	273	073	-277	133	090	851
18	Self-reliance vs Sociable	692	203	-265	-104	075	119	196	125	157	783
19	Self-reliance vs Sociable	682	-020	292	275	166	191	260	-079	113	965
20	Optical vs Imagination	124	635	019	225	-025	185	045	068	077	856
21	Jealous vs Not Je	-076	750	016	474	013	089	092	-039	-070	816
22	Jealous vs Emotionally Mature	-097	770	199	404	117	049	068	-042	117	811
23	Self-reliance vs Pile	-113	737	188	266	050	136	-035	167	-051	800
24	Assertive vs Cooperative	121	644	199	272	126	146	-013	065	060	862
25	Self-reliance vs Trustful	141	570	168	545	149	245	150	115	016	833
26	Self-reliance vs Trustful	190	539	-311	405	028	063	207	-100	018	705
27	Self-reliance vs Trustful	-280	503	-015	-350	-184	046	218	-117	-047	671
28	Self-reliance vs Trustful	528	665	135	071	207	161	-073	-025	114	838
29	Self-reliance vs Trustful	-133	-290	693	-006	284	001	-009	116	-295	726
30	Self-reliance vs Trustful	044	268	534	156	329	227	-151	-179	108	858
31	Self-reliance vs Trustful	-005	510	540	250	290	134	-115	-026	-040	782
32	Self-reliance vs Trustful	124	253	579	145	415	202	-199	-083	-112	832
33	Self-reliance vs Trustful	-405	190	506	059	091	096	253	021	118	644
34	Self-reliance vs Trustful	250	347	120	674	122	077	147	043	-045	703
35	Self-reliance vs Trustful	127	498	-122	799	139	057	079	159	124	733
36	Self-reliance vs Trustful	119	135	-033	071	379	126	-156	000	094	814
37	Self-reliance vs Trustful	114	370	072	889	121	165	131	093	-081	844
38	Self-reliance vs Trustful	-360	439	195	609	094	-093	-237	133	169	804
39	Self-reliance vs Trustful	010	502	293	603	250	269	-035	133	033	836
40	Self-reliance vs Trustful	049	227	065	236	786	071	-093	-122	-055	767
41	Self-reliance vs Trustful	022	103	114	070	777	-047	070	060	-119	659
42	Self-reliance vs Trustful	122	375	106	239	763	046	020	122	065	790
43	Self-reliance vs Trustful	362	040	037	543	512	117	-210	-233	120	758

^a Data rotated

APPENDIX B: Study B Factor Analysis

TABLE B1: Inter-correlations Among 3-Day Trait Ratings from Officer Candidates
(OCS Class 558, N = 123)

Factor Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1. Trust vs. Trustworthy	1.00																													
2. Reliability vs. Reliable	.741	1.00																												
3. Dependence vs. Dependence	.665	.665	1.00																											
4. Responsibility vs. Responsible	.590	.511	.671	1.00																										
5. Self-reliance vs. Self-reliant	.594	.520	.595	.596	1.00																									
6. Loyalty vs. Loyal	.676	.634	.626	.596	.533	1.00																								
7. Selfish vs. Selfish	-.092	.113	.110	.136	.145	.054	1.00																							
8. Selfish vs. Selfish	-.183	.031	.267	.154	.016	-.074	.557	1.00																						
9. Selfish vs. Selfish	.545	.176	.236	.471	.261	.213	.567	.514	1.00																					
10. Selfish vs. Selfish	-.153	-.275	-.296	-.646	-.317	-.282	.661	.665	.665	1.00																				
11. Selfish vs. Selfish	-.126	.015	.190	-.093	.099	.777	.607	.645	.618	.661	1.00																			
12. Selfish vs. Selfish	-.125	.070	.212	.023	.020	.272	.429	.566	.415	.561	.661	1.00																		
13. Selfish vs. Selfish	.213	.255	.346	.123	.136	.237	.410	.445	.311	.190	.211	.416	1.00																	
14. Selfish vs. Selfish	-.429	-.266	-.429	-.717	-.642	-.426	.267	.272	.267	.267	.267	.267	.267	1.00																
15. Selfish vs. Selfish	.295	.365	.366	.173	.452	.264	.672	.334	.145	.124	.233	.334	.257	-.018	1.00															
16. Selfish vs. Selfish	-.256	-.343	-.266	-.663	-.313	-.190	-.135	-.066	-.019	.046	.209	.112	-.247	-.106	-.071	1.00														
17. Selfish vs. Selfish	-.354	-.113	-.087	-.194	-.282	.078	.410	.410	.410	.410	.410	.410	.410	.410	.410	.410	1.00													
18. Selfish vs. Selfish	-.506	-.285	-.283	-.511	-.215	.064	.353	.482	.482	.482	.482	.482	.482	.482	.482	.482	.482	1.00												
19. Selfish vs. Selfish	-.006	.131	.246	.000	-.036	.246	.252	.260	.245	.170	.607	.406	.234	-.076	.143	.197	.407	.409	1.00											
20. Selfish vs. Selfish	-.415	-.513	-.407	-.329	-.682	-.362	.146	.201	.433	.345	.325	.179	-.131	.325	-.050	.286	.425	.516	.016	1.00										
21. Selfish vs. Selfish	.061	.197	.278	.236	.194	.263	.223	.210	.202	.106	.421	.405	.407	-.199	.136	.053	.244	.182	.227	-.061	1.00									
22. Selfish vs. Selfish	-.077	.123	.223	.153	.265	.091	.315	.485	.262	.237	.232	.260	.423	-.061	.210	-.111	.200	.217	.333	-.206	.517	1.00								
23. Selfish vs. Selfish	.263	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	.262	1.00							
24. Selfish vs. Selfish	.229	.116	.181	.186	.190	.196	.264	.227	.114	.064	.226	.362	.312	-.071	.124	-.057	.285	.248	.327	-.065	.536	.463	.301	1.00						
25. Selfish vs. Selfish	-.511	-.287	-.117	-.176	-.207	-.464	.237	.426	.487	.437	.439	.413	.123	.114	.004	.205	.381	.477	.276	.310	.310	.310	.310	.310	1.00					
26. Selfish vs. Selfish	-.310	.061	.126	.111	.003	.226	.434	.596	.683	.413	.726	.633	.265	-.004	.350	.597	.610	.531	.257	.369	.633	.361	.283	.509	.332	.322	.423	.276		
27. Selfish vs. Selfish	-.155	-.050	-.043	.015	-.026	.206	.066	.146	.100	.209	.233	.259	.003	.066	.135	.341	.372	.445	.285	.142	.136	.077	.245	.103	.225	.332				
28. Selfish vs. Selfish	-.232	-.107	-.154	.033	-.164	.264	-.099	.642	.087	.150	.229	.217	-.145	-.071	.002	.522	.389	.416	.282	.271	.179	-.007	.228	.101	.239	.322	.434			
29. Selfish vs. Selfish	-.268	-.246	-.113	.013	-.144	.246	.199	.170	.224	.249	.266	.204	-.045	.019	.001	.507	.296	.311	.309	.214	.210	.031	.181	.119	.222	.423	.635	.670		
30. Selfish vs. Selfish	.217	.210	.531	.643	.360	.560	.021	-.216	-.151	-.260	.272	.276	.064	-.453	.179	.154	.150	.104	.390	-.219	.366	.740	.637	.213	.068	.276	.355	.306	.296	

APPENDIX B (Continued)

TABLE B2. Loadings on Five Orthogonalized Multiple-Group and Three Centroid Factors from 3-Day Officer Candidate Ratings

(CCF Class 508, N = 175)

Trait Variable		I	II	III	IV	V	VI	VII	h ²
No.	Name								
14	Silent vs Talkative	792	-109	-095	-218	-292	-100	076	816
28	Secretive vs Frank	790	104	-082	-120	-194	-115	-125	765
16	Cautious vs Adventurous	828	115	165	036	-129	-351	058	772
3	Submissive vs Assertive	785	-315	013	318	010	237	065	863
29	Self-contained vs Sociable	756	092	-225	-101	-112	175	159	728
7	Laidback, Slow vs Energetic	723	-117	197	-114	205	-379	272	774
20	Spiteful vs Goodnatured	063	713	-092	-050	118	-028	-061	585
27	Jealous vs Not So	-018	763	-010	125	115	047	-101	631
22	Demanding vs Emotionally Mature	-363	397	-009	054	101	-011	043	565
13	Self-willed vs Mild	-513	535	-084	-038	254	-131	029	765
1	Obstructive vs Cooperative	069	574	160	016	130	038	077	749
9	Suspicious vs Trustful	164	542	252	112	326	075	072	635
21	Rigid vs Adaptable	359	556	-120	121	196	-086	196	551
17	Hard, Stern vs Kindly	-556	362	-289	-220	006	-199	-011	654
5	Cool, Aloof vs Attentive to People	129	170	-115	-232	077	130	-070	510
18	Relaxed, Indolent vs Insistently Orderly	-190	-225	263	001	563	189	993	537
4	Frivolous vs Responsible	-091	500	320	-072	522	060	-066	652
25	Unscrupulous vs Conscientious	-270	471	317	-032	564	086	-084	742
15	Quitting vs Persevering	272	338	156	103	360	-269	082	598
23	Unconventional vs Conventional	-597	252	152	-170	289	209	080	618
26	Neurotic vs Not So	335	354	215	134	217	-238	311	673
24	Worrying, Anxious vs Placid	199	529	098	549	044	-030	-010	638
6	Easily Upset vs Poised, Tough	624	046	126	314	269	168	-089	672
12	Hypochondriacal vs Not So	208	218	197	116	153	-139	077	618
11	Emotional vs Calm	-250	418	124	516	323	115	-118	671
2	Changeable vs Emotionally Stable	117	626	289	075	151	119	-167	701
8	Boorish vs Intellectual, Cultured	089	032	-112	-025	768	-033	-096	663
27	Lacking Artistic Feeling vs Esthetically Fastidious	-041	-107	056	034	815	-029	027	689
19	Clumsy, Awkward vs Polished	-048	075	050	-030	825	050	086	711
30	Immature vs Independent-Minded	641	-068	118	162	394	100	020	663

APPENDIX B (Continued)
TABLE B3 Loadings on Eight Rotated Factors from 3-Day Officer Candidate Ratings
(CCS Class 45B, N = 123)

Test Variable	I	II	III	IV	V	VI	VII	VIII	R ²
Item									
14 Silent vs Talkative	745	-158	-336	-055	-244	-020	228	-055	811
28 Secretive vs Frank	726	109	-304	117	-197	-028	108	-244	763
10 Cautious vs Adventurous	735	067	-111	355	-192	-064	153	105	760
16 Submissive vs Assertive	651	-399	-286	360	087	070	-121	219	874
24 Self-controlled vs Sociable	656	067	-428	031	-117	261	128	073	736
1 Langui, Slow vs Energetic	704	013	018	221	248	-165	324	125	757
15 Spiteful vs Goodnatured	321	739	-028	177	000	063	059	-007	587
21 Jealous vs Not So	-792	691	023	324	019	141	-094	-017	625
22 Demanding vs Emotionally Mature	-459	621	123	296	024	025	100	117	724
11 Self-willed vs Rild	-531	648	134	076	146	040	104	-037	761
1 Constructive vs Cooperative	097	460	145	392	265	217	11	-012	734
5 Suspicious vs Trustful	117	526	245	457	-349	174	061	097	626
21 Rigid vs Adaptable	177	445	-250	377	-136	222	194	-143	554
17 Hard, Stern vs Kindly	-534	447	-056	-272	-013	041	115	-259	645
5 Cool, Aloof vs Attentive to People	424	335	-139	036	024	051	022	104	524
12 Polished, Impolite vs Insistently Orderly	-095	-187	375	-006	551	057	-029	202	534
6 Frivolous vs Responsible	-012	108	440	196	388	143	017	-052	644
25 Unscrupulous vs Conscientious	-181	465	185	171	438	160	-074	-080	743
15 Quitting vs Persevering	227	228	334	189	214	-117	281	-023	593
23 Unconventional vs Conventional	-462	309	398	-170	241	160	-025	200	625
26 Neurotic vs Not So	998	108	033	734	075	062	263	028	644
24 Herrying, Anxious vs Placid	023	315	-030	712	-077	030	-150	000	637
6 Easily Upset vs Poised, Tough	501	-051	-085	538	234	012	-240	113	660
12 Hypochondriacal vs Not So	061	087	063	595	028	185	048	-227	451
11 Emotional vs Calm	-336	312	180	531	218	007	-129	087	687
2 Changeable vs Emotionally Stable	141	594	332	391	303	050	-135	098	752
8 Boorish vs Intellectual, Cultured	062	157	-021	079	775	000	019	-131	654
27 Lacking Artistic Feeling vs Esthetically Fastidious	-055	-026	141	124	734	-061	066	047	681
19 Clumsy, Awkward vs Polished	-045	153	171	110	773	054	103	102	696
10 Immature vs Independent-Minded	564	-105	-013	400	367	-025	-006	159	655

APPENDIX C: Study C Factor Analysis
TABLE C1. Intercorrelations Among Traits Observed Near End of OCS
(OCS Class 338, N=125)

Trait Variable	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Mean	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
14 Silent vs Talkative																	
15 Secretive vs Frank	521																
16 Cautious vs Adventurous	521	521															
17 Submissive vs Assertive	521	521	521														
18 Self-controlled vs Sociable	521	521	521	521													
19 Laid-back vs Energetic	521	521	521	521	521												
20 Spontaneous vs Conscientious	521	521	521	521	521	521											
21 Impulsive vs Not So	521	521	521	521	521	521	521										
22 Demanding vs Externally Motivated	521	521	521	521	521	521	521	521									
23 Self-willed vs Mild	521	521	521	521	521	521	521	521	521								
24 Constructive vs Cooperative	521	521	521	521	521	521	521	521	521	521							
25 Suspicious vs Trustful	521	521	521	521	521	521	521	521	521	521	521						
26 Rigid vs Adaptable	521	521	521	521	521	521	521	521	521	521	521	521					
27 Hostile vs Kindly	521	521	521	521	521	521	521	521	521	521	521	521	521				
28 Cool, Aloof vs Attentive to People	521	521	521	521	521	521	521	521	521	521	521	521	521	521			
29 Relaxed, Indifferent vs Intensely Curious	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521		
30 Privileged vs Responsible	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	
31 Unconcerned vs Conscientious	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
32 Quitting vs Persevering	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
33 Unconcerned vs Conventional	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
34 Neatness vs Not So	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
35 Nervous, Anxious vs Placid	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
36 Easily Upset vs Proud, Tough	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
37 Hypochondriacal vs Not So	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
38 Emotional vs Calm	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
39 Changeable vs Emotionally Stable	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
40 Boorish vs Intellectual, Cultured	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
41 Lacking Artistic Feeling vs Extravertically Fanciful	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
42 Canny, Ambivalent vs Polite	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521
43 Immature vs Independent-Minded	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521	521

APPENDIX C (Continued)

TABLE C2 Loadings on Five Orthogonalized Multiple-Group and Three Centroid Factors for Ratings Obtained Late in OCS
(OCS Class 538, N = 125)

Trait Variable	I	II	III	IV	V	VI	VII	Σ
14 Silent vs Talkative	738	-157	-076	-295	-202	057	058	715
28 Secretive vs Frank	728	304	050	-104	199	-082	041	684
16 Cautious vs Adventurous	822	023	-104	160	209	-070	-091	772
3 Shrewd vs Impulsive	846	-290	130	238	030	112	113	911
20 Self-contained vs Sociable	792	087	-106	-110	198	102	040	714
7 Laidback vs Energetic	606	003	164	009	155	-189	-165	615
10 Spiteful vs Good-natured	003	776	-030	-028	116	-048	048	785
20 Jealous vs Not So	-031	740	-084	185	148	050	056	831
22 Demanding vs Emotionally Mature	-213	778	-101	-009	132	-082	024	857
13 Self-willed vs Mild	-306	761	068	004	138	-078	-070	882
1 Obstructive vs Cooperative	-025	712	203	002	601	-089	043	523
9 Suspicious vs Trustful	046	598	086	284	645	096	121	899
21 Rigid vs Adaptable	392	611	-048	222	286	111	020	744
17 Hard, Stern vs Kindly	-580	359	-240	-554	120	107	075	877
5 Cool, Aloof vs Attentive to People	180	524	190	-576	561	186	126	863
18 Relaxed, Indolent vs Industrious	-396	-189	100	-206	540	-168	072	721
4 Privileged vs Responsible	-166	511	443	091	578	139	109	858
20 Unreliable vs Conscientious	-152	585	232	-084	577	-067	045	873
15 Quitting vs Persevering	141	410	366	199	675	084	043	832
23 Unconventional vs Conventional	-504	136	228	-259	118	-051	071	769
26 Neurotic vs Not So	296	510	255	348	511	-022	084	803
24 Nervous, Anxious vs Placid	422	507	-054	533	382	018	046	871
6 Easily Upset vs Poised, Tough	113	165	072	571	504	112	-035	801
12 Hypochondriacal vs Not So	237	526	092	529	308	-102	051	772
11 Emotional vs Calm	-125	559	026	446	559	056	-068	852
2 Changeable vs Emotionally Stable	-011	646	162	316	581	069	-022	897
8 Roush vs Intellectual, Cultured	053	091	-055	063	839	151	-147	776
27 Lacking Artistic Feeling vs Ethetically Fastidious	-044	-355	112	-122	851	-167	-027	825
19 Clumsy, Awkward vs Polished	030	064	-058	059	900	022	050	834
30 Immature vs Independent-minded	505	156	234	360	562	140	093	846

APPENDIX C (Continued)
TABLE C3. Loadings on Eight Rotated Factors from Ratings Late in OCS
(OCS Class 558, N = 125)

Trait Variable		I	II	III	IV	V	VI	VII	VIII	P ²
No.	Name									
11	Silent vs Talkative	651	-110	-203	-111	-230	-005	-070	-031	715
24	Secretive vs Frank	751	313	036	-053	000	-068	-067	-031	684
14	Cautious vs Adventurous	810	095	-276	096	095	-082	061	-038	771
25	Submissive vs Assertive	834	-321	-227	138	-034	032	035	-111	911
28	Self-contained vs Sociable	778	182	-162	-158	038	123	046	-425	714
1	Leisurely vs Energetic	694	049	056	056	352	-185	-130	-438	675
16	Spiteful vs Goodnatured	092	794	277	169	160	010	058	066	785
20	Jealous vs Not So	053	770	173	362	225	029	063	-075	831
22	Reverent vs Emotionally Warm	-127	822	259	192	227	-071	053	022	857
13	Self-reliant vs Mild	-156	728	144	248	227	-015	-042	099	882
17	Obstructive vs Cooperative	138	692	168	289	236	-014	-048	085	923
5	Suspicious vs Trustful	154	670	088	149	405	063	079	-155	899
21	Rigid vs Adaptable	398	640	-156	273	068	-175	-082	-085	776
17	Hard, Stern vs Kindly	-578	507	219	-444	112	125	-095	005	873
6	Cool, Aloof vs Attentive to People	315	582	172	-133	310	264	-138	004	865
18	Relaxed, Indolent vs Insistently Orderly	-217	-171	511	-028	597	-022	-019	152	718
1	Frivolous vs Responsible	045	144	614	397	333	219	001	016	859
25	Unscrupulous vs Conscientious	-176	560	553	196	104	-038	046	-024	873
15	Quitting vs Persevering	311	355	133	136	132	113	028	-085	832
23	Unconventional vs Conventional	-356	111	583	-003	321	038	124	-094	769
26	Neurotic vs Not So	132	131	252	526	248	-028	-082	-058	803
21	Worrying, Anxious vs Placid	180	501	-108	598	125	009	023	-049	871
12	Easily Upset vs Poised, Tough	493	170	-028	620	305	168	053	-034	801
13	Hypochondriacal vs Not So	309	140	040	648	081	-114	-154	112	773
11	Emotional vs Calm	-008	555	114	626	340	049	056	-088	350
2	Changeable vs Emotionally Stable	139	598	315	556	322	-018	088	046	399
8	Bourish vs Intellectual, Cultured	181	302	043	156	715	283	-113	-002	776
27	Lacking Artistic Feeling vs Esthetically Fastidious	091	020	232	-002	856	-002	103	112	825
19	Clumsy, Awkward vs Polished	180	277	066	162	813	385	064	-092	834
30	Reserved vs Independent-Minded	627	113	172	172	352	111	-152	-183	846

TABLE D1. Intercorrelations Among Trait Ratings from 499 Command and Staff School Officers

TABLE D1. Intercorrelations Among Trait Ratings from 499 Command and Staff School Officers

Trait Variable	14	20	16	3	29	7	10	20	22	13	1	9	21	17	5	18	4	25	15	23	26	24	6	12	11	2	8	34	19	30
14 Extent vs. Technique	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
16 Selfish vs. Frigid	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
18 Calculous vs. Adventurous	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
26 Selfish vs. Frigid	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
28 Calculous vs. Adventurous	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
3 Submissive vs. Assertive	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
5 Self-reliant vs. Sociable	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
7 Long-lived vs. Ephemeral	706	726	709	546	665	-103	-755	-440	-562	-306	-027	018	-326	209	-124	-160	-211	080	-473	105	-031	350	063	-521	-189	194	56	044	401	
12 Selfish vs. Generous	-125	005	-112	-295	106	-050	537	430	455	540	416	426	381	434	-157	128	260	-047	229	289	123	017	205	247	238	014	-030	156	-103	
20 Jealous vs. Not Jealous	-255	-098	-167	-308	-114	-070	337	520	449	534	510	297	224	225	-034	240	382	090	163	341	271	106	304	392	400	173	030	247	027	
22 Demanding vs. Emotionally Mature	-440	-294	-381	-497	-258	-288	490	520	595	563	380	264	335	249	-015	357	419	099	362	227	192	007	205	499	422	084	246	-104		
113 Self-reliant vs. Mild	-562	-421	-578	-859	-380	-458	459	595	561	249	165	509	195	141	325	446	041	515	105	-032	-230	036	494	315	-084	-052	142	-328		
1 Obstructive vs. Cooperative	-596	-208	-264	-403	-062	-112	540	534	563	561	469	342	385	320	145	324	353	157	363	263	110	043	138	425	436	209	125	382	-080	
3 Suspicious vs. Trustful	-627	-101	056	-039	021	222	412	510	380	249	469	239	000	289	-038	319	317	242	066	473	378	287	341	335	483	322	-123	364	235	
21 Rigid vs. Adaptable	-128	117	048	-196	278	026	426	297	264	165	342	239	232	252	-331	-057	003	-216	-010	134	149	019	167	035	064	-071	621	108	-112	
17 Herd vs. Kindly	-126	-284	-400	-562	-407	-350	381	224	325	509	385	000	232	221	-012	028	214	-215	358	-111	-294	-427	-093	140	-053	-215	-130	-031	-483	
5 Cool, Aloof vs. Attentive to People	299	300	163	009	291	219	435	224	242	199	320	289	252	221	-093	178	195	073	259	231	017	294	182	-011	098	108	026	217	032	
18 Relaxed, Incoherent vs. Instantly Orderly	-124	-163	-209	016	-288	027	-157	-034	-015	141	142	-038	-331	-012	-093	452	373	437	272	-057	-192	070	-210	207	262	395	-216	288	243	
4 Frivolous vs. Responsible	-180	-121	-164	-075	-272	079	128	240	357	325	334	319	-057	028	178	452	654	533	398	266	101	203	077	421	502	489	149	376	336	
121 Unselfish vs. Selfish	-187	-282	-145	-088	060	382	419	446	453	317	003	214	093	373	654	419	431	228	019	078	097	415	474	357	090	419	226	317	535	
113 Unselfish vs. Selfish	080	136	063	208	-149	284	-047	090	099	041	157	242	-216	-215	073	437	533	419	158	222	116	350	017	172	410	519	025	317	535	
23 Unconventional vs. Conventional	-473	-166	-496	-458	-372	-339	228	163	362	515	353	066	-030	358	059	272	398	431	158	001	-120	-191	-060	363	230	005	-028	117	-154	
105 Neuteric vs. Not So	105	159	180	141	050	236	289	341	227	101	263	473	134	-111	231	-057	266	228	222	001	446	446	434	225	388	266	131	307	304	
204 Worried, Anxious vs. Placid	-031	073	116	132	-006	125	073	171	182	-031	110	378	149	-294	077	-192	101	116	-120	446	408	335	263	265	137	303	203	293		
6 Easily Upset vs. Poised, Tough	350	353	363	470	133	477	017	106	007	-230	043	387	019	-427	094	070	203	078	350	-191	446	408	209	123	390	477	218	302	591	
12 Hypochondriac vs. Not So	063	155	186	052	075	202	205	304	205	038	138	341	167	-093	162	-210	077	097	017	-060	434	339	209	121	166	012	-024	048	125	
11 Emotional vs. Calm	-521	-416	-432	-385	-416	-302	382	499	494	425	335	035	140	-011	207	421	151	172	393	225	283	123	121	485	192	027	279	012		
21 Emergent vs. Emotionally Stable	-159	-099	-168	-099	-247	076	238	400	422	315	436	483	064	-353	098	262	502	474	410	230	388	265	330	166	495	521	269	453	341	
8 Blush vs. Intellectually, Cultured	194	164	161	290	-007	385	014	173	082	-044	209	322	-071	-215	108	395	449	367	519	005	260	157	477	012	192	521	471	567	624	
34 Prudish, Logical vs. Inquisitive	136	-111	133	164	095	277	-030	030	004	-052	125	-123	021	-130	026	-216	148	083	226	-028	131	037	218	-024	027	269	471	363	331	
19 Clever, Forward vs. Foolish	044	016	-011	081	072	266	156	247	246	142	382	364	108	-731	217	286	376	302	371	117	307	203	302	408	279	451	567	363	361	
19 Temperate vs. Independent-Minded	401	360	427	552	063	553	012	027	-104	-328	-080	235	-112	-483	032	243	336	146	535	-154	304	283	591	125	012	341	624	331	361	

APPENDIX D (Continued)

TABLE D2. Loadings on Five Orthogonalized Multiple-Group Factors from 499 Command and Staff School Officers

Trait Variable		I	II	III	IV	V	h^2
No.	Name						
14	Silent vs Talkative	850	-114	138	-054	042	810
28	Secretive vs Frank	784	044	074	036	-176	654
16	Cautious vs Adventurous	829	-066	013	144	007	713
3	Submissive vs Assertive	734	-338	225	269	103	787
29	Self-contained vs Sociable	619	137	-223	-135	127	487
7	Languid, Slow vs Energetic	762	034	318	149	168	733
10	Spitfire vs Goodnatured	033	752	-069	-096	-111	593
20	Jealous vs Not So	-204	682	060	168	-012	539
22	Demanding vs Emotionally Mature	-438	631	064	087	-008	602
13	Self-willed vs Mild	-617	525	091	-151	-079	694
1	Obstructive vs Cooperative	-270	705	203	-074	116	630
9	Suspicious vs Trustful	-016	606	161	394	-073	554
21	Rigid vs Adaptable	151	535	-259	-084	014	383
17	Hard, Stern vs Kindly	-340	389	-113	-526	-112	569
5	Cool, Aloof vs Attentive to People	310	520	153	-193	-089	435
18	Relaxed, Indolent vs Insistently Orderly	-252	-130	565	-100	033	426
4	Frivolous vs Responsible	-237	246	750	118	011	693
25	Unscrupulous vs Conscientious	-319	382	627	-016	-046	643
15	Quitting vs Persevering	042	035	723	171	099	565
23	Unconventional vs Conventional	-543	194	294	-147	-083	453
26	Neurotic vs Not So	159	418	195	547	-011	537
24	Worried, Anxious vs Placid	049	265	-077	624	048	470
6	Easily Upset vs Poised, Tough	385	150	308	490	169	533
12	Hypochondriacal vs Not So	154	446	-031	402	-205	348
11	Emotional vs Calm	-574	442	219	335	000	610
2	Changeable vs Emotionally Stable	-232	416	444	349	276	622
8	Boorish vs Intellectual, Cultured	164	163	654	163	427	747
34	Practical, Lirical vs Imaginative	083	066	029	101	654	451
19	Clumsy, Awkward vs Polished	040	354	422	119	452	532
30	Immature vs Independent-Minded	102	-015	544	392	284	692

APPENDIX D (Continued)

TABLE D-1 Loadings on Five Rotated Factors from 199 Command and Staff School Officers

Trait Variable		I	II	III	IV	V	Σ^2
No.	Name						
14	Silent vs Talkative	827	-161	-164	-115	242	809
28	Secretive vs Frank	807	-022	-062	003	018	656
16	Cautious vs Adventurous	765	-152	-226	083	127	711
3	Submissive vs Assertive	680	-134	-092	161	320	788
29	Self-contained vs Sociable	527	127	-418	-134	043	488
7	Languid, Slow vs Energetic	727	-050	-065	114	432	735
10	Spiteful vs Goodnatured	110	749	001	067	-125	593
20	Jealous vs Not So	-120	639	110	322	000	539
22	Demurring vs Emotionally Mature	-350	624	177	245	-026	603
13	Self-willed vs Mild	-513	583	289	245	-088	695
1	Obstructive vs Cooperative	-190	721	165	089	179	623
9	Suspicious vs Trustful	091	500	170	514	342	553
21	Rigid vs Adaptable	130	532	-250	032	-130	380
17	Hard, Stern vs Kindly	-295	517	072	-411	-203	569
5	Cool, Aloof vs Attentive to People	374	524	082	-094	070	435
18	Relaxed, Indolent vs Insistently Orderly	-175	-141	486	-132	313	422
4	Frivolous vs Responsible	-100	222	637	176	444	693
25	Unscrupulous vs Conscientious	-172	390	598	078	312	643
15	Quitting vs Persevering	119	-012	488	168	533	565
23	Unconventional vs Conventional	-446	254	428	-076	044	454
26	Neurotic vs Not So	236	273	112	614	135	538
24	Hesitant, Anxious vs Placid	069	118	-100	604	-004	470
6	Easily Upset vs Poised, Tough	365	012	031	490	374	523
12	Hypochondriacal vs Not So	226	213	048	471	-150	345
11	Emotional vs Calm	-489	297	295	431	104	611
2	Changeable vs Emotionally Stable	-189	344	251	443	460	625
8	Boorish vs Intellectual, Cultured	126	115	178	188	800	746
34	Practical, Logical vs Imaginative	-085	049	-378	110	534	452
19	Clumsy, Awkward vs Polished	003	321	062	195	624	534
30	Immature vs Independent-Minded	349	-128	142	358	613	692

TABLE 21. Intercorrelations Among Test Ratings of Cornell's Male College Students^a

1001 - M

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
Rate	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																									
Value	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																									
1	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																									
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																										
20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																											
30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																												
40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																													
50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																														
60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																															
70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																																
80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																																	
90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																																		
100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																																			
110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000																																																				
120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520																																																																																																					

9. The authors thank the referees of *Biometrika* and *Journal of the Royal Statistical Society* for their comments. Corrections have been collected from the original authors. Corrections are omitted.

APPENDIX E (Continued)

TABLE 12. Five Orthogonalized Multiple Group and Three Centroid Factors from Cattell's Male College Students.
(N = 133)

Traits/Variable		I	II	III	IV	V	VI	VII	VIII	Σ	h^2
14	Silent vs Talkative	785	-280	554	-158	023	154	-142	-139		732
15	Serious vs Fun	651	-149	062	-041	085	-387	-066	135		649
16	Cautious vs Adventurous	749	-143	-229	092	-005	204	144	093		713
17	Submissive vs Assertive	448	-540	161	292	276	-344	-180	-040		813
18	Self-controlled vs Sociable	736	-157	-249	-244	032	104	176	130		753
19	Logical vs Emotional	575	019	202	060	486	277	-052	-246		752
20	Steady vs Changeable	685	-190	-194	060	449	075	-156	112		806
21	Slight vs Marked Interest in Opposite Sex	498	-106	-060	305	011	-089	133	148		637
22	Depressed vs Cheerful	610	104	-080	-118	070	312	-063	-244		574
23	Spontaneous vs Controlled	190	737	-175	-263	151	-090	056	136		721
24	Impulsive vs Reserved	-012	643	032	267	-035	400	-100	066		718
25	Domineering vs Submissively Mature	-185	788	-002	247	180	155	-169	051		751
26	Self-reliant vs Mild	-323	750	-102	-080	206	-158	-038	045		755
27	Constructive vs Cooperative	330	559	248	308	302	-372	273	-255		874
28	Responsible vs Trustful	094	546	-050	250	179	359	079	086		592
29	Rigid vs Adaptable	485	518	-159	071	006	277	217	-123		674
30	Hard vs Friendly	112	527	033	-464	-126	200	223	-089		659
31	Cool vs Warm	556	294	085	-309	365	-230	045	-053		685
32	Attention Seeking vs Self-sufficient	-559	597	120	278	011	185	-085	172		833
33	Relaxed vs Tense	-314	067	131	163	473	-258	-124	-153		641
34	Principled vs Responsible	-281	433	180	090	431	184	-151	-034		663
35	Unconventional vs Conventional	-318	561	140	-284	162	-162	-081	156		716
36	Quitting vs Persevering	-256	214	169	207	524	-277	-221	152		714
37	Unconventional vs Conventional	-414	257	409	031	-128	196	259	070		532
38	Neurotic vs Not So	136	329	088	698	-049	120	-133	-173		688
39	Worrying vs Not Worrying	055	146	-307	627	082	-116	-029	-099		543
40	Shy vs Not Shy	104	061	-119	611	283	234	-175	-045		570
41	Hypochondriacal vs Not So	080	179	318	577	098	054	187	196		558
42	Emotional vs Calm	-458	173	-335	351	184	-198	-087	-167		777
43	Changeable vs Emotionally Stable	-221	471	072	244	536	-238	-144	205		744
44	Dependent vs Self-sufficient										
45	Shrewish vs Intellectual, Cultured	-051	091	130	079	719	070	-196	064		598
46	Loathing Artistic Feeling vs Esthetically Pessimistic	135	-104	-109	-111	548	-128	238	-368		433
47	Practical, Logical vs Imaginative	079	-059	-481	-564	325	-074	-119	-169		721
48	Clammy, Reserved vs Polished	-074	013	-020	052	710	078	-070	-288		536
49	Lonely vs Independent-minded	055	069	305	405	571	-088	-411	273		812

Others did not enter into the original groupings.

APPENDIX E (Continued)

TABLE E.3 Loadings on Five Rotated Multivariate-Group Factors and Three Additional Centroid Factors from Cattell's Male College Students

(N = 133)

Trail Variable	I	II	III	IV	V	VI	VII	VIII	$\frac{1}{2}h^2$
14 Silent vs Talkative	732	-026	-439	-119	-045	085	-156	250	639
15 Sociative vs Private	713	-132	-074	087	-058	-303	-122	126	662
16 Curious vs Adversous	605	112	-585	054	029	111	128	-080	713
17 Submissive vs Assertive	564	-123	-191	230	250	-221	-209	127	713
28 Self-controlled vs Unstable	708	000	-364	-111	-046	094	257	045	715
7 Languid, Slow vs Energetic	521	-164	-233	110	153	230	-097	158	685
33 Shy, Withdrawn vs Outgoing	653	-072	-242	043	132	069	113	198	706
31 Slight vs Marked Interest in Opposite Sex	515	-055	-130	-079	-055	094	246	-188	396
32 Depressed vs Cheerful	424	372	-342	-102	116	170	065	159	524
10 Spirited vs Condemned	172	704	269	011	-056	-116	166	113	662
20 Jealous vs Not Je	-224	647	024	287	030	301	-135	035	715
22 Dominant vs Submissively Mature	-295	673	325	226	072	072	100	212	763
13 Self-willed vs Not	-265	514	547	147	006	-087	183	135	720
1 Constructive vs Destructive	433	474	554	125	-024	036	223	219	755
9 Suspicious vs Trustful	-006	630	029	217	110	325	-062	-066	613
21 Rigid vs Adaptable	317	649	-172	265	-106	255	132	-133	719
17 Warm, Warm vs Coldly	655	589	139	-195	-247	189	053	036	626
5 Cool, Aloof vs Attentive to People	574	316	194	-195	-127	-117	155	275	622
31 Attention Seeking vs Self-sufficient	-567	315	116	267	012	259	-120	-056	770
18 Deland, Insolent vs Impetuously Orderly	-104	-111	606	131	393	127	-248	206	707
6 Frivolous vs Responsible	-127	256	609	155	247	232	-313	061	737
23 Unscrupulous vs Conscientious	-247	103	536	-120	219	-269	-216	119	685
15 Quelling vs Persuading	-126	000	192	360	454	-157	-482	154	683
23 Unconventional vs Conventional	-313	977	388	-046	-194	354	-172	-200	512
26 Nervous vs Not So	-072	250	-065	647	015	268	-125	115	595
24 Worrying, Anxious vs Placid	-062	096	-133	687	084	-058	136	072	537
6 Shelly Upset vs Relaxed, Tough	-025	-062	-089	616	317	131	103	044	693
12 Hypochondriacal vs Not So	-020	236	-008	406	134	138	-305	-137	570
11 Emotional vs Calm	-386	134	417	481	101	064	313	393	567
2 Changeable vs Emotionally Stable	-160	274	398	363	490	-159	-045	150	650
37 Dependent vs Self-sufficient									
8 American vs Intellectual, Cultured	083	117	292	031	712	049	-240	114	491
27 Lacking Artistic Feeling vs Esthetically Predisposed	303	006	109	-178	140	-097	136	076	333
26 Practical, Logical vs Imaginative	187	044	010	-381	223	-236	264	170	347
19 Easy, Amiable vs Reserved	083	-056	291	040	607	115	228	222	457
30 Mature vs Independent-minded	-002	117	104	387	613	-155	-241	159	605

APPENDIX E (Continued)

TABLE E4. Loadings on Eight Final Rotated Factors from Cattell's Male College Students
(N = 133)

Trait Variable		I	II	III	IV	V	VI	VII	VIII	n ²
No.	Name									
14	Silent vs Talkative	797	-094	-296	-003	034	143	-263	146	844
28	Secretive vs Frank	667	-242	-075	-052	157	-285	-008	263	590
16	Cautious vs Adventurous	703	118	-439	093	-134	-027	-168	-141	776
3	Submissive vs Assertive	448	-629	-141	144	225	-290	108	-024	778
29	Self-contained vs Sociable	712	017	-425	-121	053	057	111	-073	718
7	Intimid, Slow vs Energetic	510	214	-166	394	320	156	-251	-126	694
33	Shy, Bashful vs Composed	606	-089	-309	186	431	071	-004	-064	700
35	Slight vs Marked Interest in Opposite Sex	480	-022	-21	-144	-007	-074	174	-244	391
32	Depressed vs Cheerful	460	336	-359	083	123	118	-192	-030	527
20	Spitfire vs Goodnatured	118	720	059	-028	139	-270	031	180	662
20	Jealous vs Not So	-159	634	031	447	-194	-063	-232	-022	724
22	Demanding vs Emotionally Mature	-303	718	169	303	087	-097	024	119	767
13	Self-willed vs Mild	-327	605	327	054	148	-196	192	167	714
1	Obstinate vs Cooperative	370	555	341	073	252	-209	302	118	779
9	Suspicious vs Trustful	008	594	-019	433	043	-117	-191	-210	637
21	Rigid vs Adaptable	343	601	-265	225	-204	-210	-039	-158	712
17	Hard, Stern vs Kindly	136	679	114	-306	-125	085	-135	-051	630
5	Cool, Aloof vs Attentive to People	505	349	028	-060	401	-133	078	166	593
31	Attention Getting vs Self-sufficient	-538	398	412	351	-172	-037	-063	-094	785
18	Relaxed, Indolent vs Industrious Orderly	-144	-110	636	311	397	074	-009	-024	698
4	Privorous vs Responsible	-139	310	634	343	173	-092	-199	-091	725
25	Unscrupulous vs Conscientious	-326	382	450	-031	341	-171	-238	175	688
15	Quitting vs Persevering	-235	-066	449	385	446	-215	-095	125	680
23	Unconventional vs Conventional	-272	192	480	007	-319	068	-060	-215	511
26	Neurotic vs Not So	-029	183	-024	699	-215	-121	073	111	602
24	Worrying, Anxious vs Placid	-105	018	-234	576	-049	-236	245	165	543
6	Easily Tied vs Poised, Tough	002	-036	-090	764	019	119	198	-214	693
12	Hypochondriacal vs Not So	-027	086	058	481	-111	-238	-239	-089	377
11	Emotional vs Calm	-440	229	217	401	075	-087	155	040	676
2	Changeable vs Emotionally Stable	-294	219	229	438	474	-260	-004	104	682
8	Boorish vs Intellectual, Cultured	-012	058	254	338	642	-012	-286	-121	551
27	Lacking Artistic Feeling vs Esthetically Fastidious	190	022	-037	-066	548	-012	-003	-106	354
14	Practical, Logical vs Imaginative	111	119	-149	-341	403	076	056	061	394
19	Clumsy, Awkward vs Polished	-007	064	130	253	626	174	160	-163	588
30	Immature vs Independent-Minded	-122	-013	049	540	485	-220	-227	087	652

APPENDIX F: Study F Factor Analysis
TABLE F1: Interpretations Among Trait Ratings of Cattell's Female College Students.^a
(N = 246)

Trait Variable	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36												
1. Social desirability	119	745	740	626	629	614	140	-186	-215	-275	-33	687	249	412	-353	-216	-332	-217	-152	-126	-113	-587	-308	-155	-141	642	435	-582	006	-315	-197	227	423	-043	
2. Self-reliance	643	681	675	642	141	-641	-142	-286	-077	-128	642	121	-138	-483	-170	-058	-141	132	516	-504	-152	-358	-138	111	322	003	175	423	-509	-104	-483	-100	282	431	64
3. Leadership	140	648	680	249	-105	-115	-087	215	150	370	457	-618	-288	-339	-223	-110	-018	-180	-293	-505	-287	-233	-039	-085	245	-485	175	423	-509	-104	-483	-100	282	431	64
4. Warmth	677	645	141	647	021	-113	359	123	308	389	-113	054	-110	184	115	087	193	175	-333	113	180	131	333	428	-302	-047	-278	-073	156	329	003	156	329	003	
5. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
6. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
7. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
8. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
9. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
10. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
11. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
12. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
13. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
14. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
15. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
16. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
17. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
18. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
19. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
20. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
21. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
22. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
23. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
24. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
25. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
26. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
27. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
28. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
29. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
30. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
31. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
32. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
33. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
34. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
35. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003
36. Sensitivity to criticism	643	651	249	159	145	145	301	380	346	-399	-124	-375	-189	225	076	-061	556	-276	033	-053	061	019	098	-222	257	-132	-111	329	003	156	329	003	156	329	003

^a Made available through the courtesy of Professor Raymond B. Cattell and reproduced with his permission. Certain variables have been reflected from the original matrix. Decimals are omitted.

TABLE 2. Loadings on Five Orthogonalized Multiple-Group and Seven Centroid Factors from Cattell's Female College Students (N = 240)

Rank	Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
16	Altruism vs. Egoism	889	-132	-647	-189	-28	-655	-340	-679	-664	642	-616	-632	881
20	Selfishness vs. Altruism	760	-192	692	-633	-170	-125	-640	-679	-664	642	-616	-632	681
26	Selfishness vs. Altruism	854	-684	-208	157	698	-656	-656	625	114	632	-696	656	684
29	Selfishness vs. Altruism	199	-572	387	167	171	-157	134	639	-657	632	-692	648	850
30	Selfishness vs. Altruism	834	623	-168	-228	-693	153	669	-669	-676	-698	112	670	834
31	Selfishness vs. Altruism	792	623	-168	-228	-693	153	669	-669	-676	-698	112	670	806
35	Selfishness vs. Altruism	129	-668	282	674	-621	694	-670	216	158	692	-685	328	819
36	Selfishness vs. Altruism	512	-182	-224	-645	695	-176	202	658	-312	-670	-660	327	852
37	Selfishness vs. Altruism	755	316	-313	616	-654	216	120	134	-150	669	-669	692	857
40	Selfishness vs. Altruism	225	811	-138	-318	640	-605	-654	-684	-651	-131	641	-670	757
42	Selfishness vs. Altruism	-647	818	-645	116	685	-601	-668	-660	670	661	-111	673	757
43	Selfishness vs. Altruism	-113	851	124	641	616	-616	-626	-649	-626	-636	-111	673	757
44	Selfishness vs. Altruism	-213	843	-618	-651	-616	666	-675	-699	-656	-651	-682	666	757
45	Selfishness vs. Altruism	272	682	600	-110	608	-641	138	669	655	-112	696	666	757
46	Selfishness vs. Altruism	261	707	-670	314	112	107	669	116	126	137	166	666	757
47	Selfishness vs. Altruism	191	619	-361	685	613	107	662	625	619	672	-677	666	757
48	Selfishness vs. Altruism	-632	754	-141	-686	111	671	-646	-637	-619	-118	233	666	757
49	Selfishness vs. Altruism	833	631	109	-210	-301	-181	-137	220	-312	-610	679	322	757
50	Selfishness vs. Altruism	-546	595	128	157	-664	117	-137	-693	682	671	-656	667	757
51	Selfishness vs. Altruism	-603	-205	628	639	-110	193	679	677	-690	633	-681	336	757
52	Selfishness vs. Altruism	-183	668	709	668	693	-689	658	-632	-632	632	-611	110	757
53	Selfishness vs. Altruism	-315	592	632	-181	640	614	-668	-646	-665	-681	685	110	757
54	Selfishness vs. Altruism	-370	299	179	-322	-612	346	153	-151	-100	193	-615	190	757
55	Selfishness vs. Altruism	-612	450	634	583	-159	189	-117	677	-684	690	108	-668	757
56	Selfishness vs. Altruism	665	141	-636	634	-664	-165	653	-646	694	-115	673	641	806
57	Selfishness vs. Altruism	140	-131	274	658	291	-200	216	-646	-112	117	-167	647	765
58	Selfishness vs. Altruism	618	662	662	566	-107	123	-190	698	175	674	115	-679	658
59	Selfishness vs. Altruism	-604	362	104	576	655	617	132	-102	-636	-699	-646	669	763
60	Selfishness vs. Altruism	-110	563	616	647	699	336	627	-698	665	692	-656	693	771
61	Selfishness vs. Altruism	-624	263	570	110	584	-227	-266	102	651	649	100	119	859
62	Selfishness vs. Altruism	-114	-694	195	630	311	111	228	254	696	-312	-134	115	557
63	Selfishness vs. Altruism	262	166	-117	-168	644	-667	-169	208	193	-256	674	-674	698
64	Selfishness vs. Altruism	202	215	119	-100	304	-160	259	-160	2	-163	137	151	819
65	Selfishness vs. Altruism	210	017	568	361	494	-286	-123	672	-165	107	671	113	904

APPENDIX F (Continued)

TABLE F3 Loadings on 12 Rotated Factors from Cattell's Female College Students

(N = 240)

Test Variable

Test	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	h ²
Age													
14 Silent vs Talkative	810	-089	-291	-178	-119	-067	-155	-040	-030	134	-052	-167	882
28 Secretive vs Frank	714	-161	-171	-032	-045	-079	-132	-105	113	-011	-160	-108	684
26 Cautious vs Adventurous	649	020	-178	154	-021	118	-096	039	128	161	-072	-227	851
3 Submissive vs Assertive	579	-532	025	195	346	078	-172	-077	-058	094	-001	-078	837
29 Self-contained vs Sociable	683	103	-314	-276	-246	152	-186	-120	-014	074	058	-077	806
7 Laidback, Slow vs Energetic	770	086	038	079	076	144	-155	226	114	122	-040	-285	820
33 Self-reliant vs Dependent	723	-016	-220	225	342	201	-016	-108	-193	115	-027	038	851
15 Selfish vs Altruistic	425	-134	-259	-060	-173	427	007	-088	-204	104	133	026	560
12 Depressed vs Cheerful	612	405	-252	-025	-208	171	-147	185	097	133	104	-193	806
10 Spiteful vs Goodnatured	132	803	-178	-178	-026	-019	122	-036	-079	-063	-002	-184	728
22 Assertive vs Not So	-105	799	011	135	066	-012	117	049	102	039	-126	-156	738
22 Demanding vs Emotionally Mature	-094	802	163	053	103	-054	159	032	-049	-207	-121	-358	775
3 Self-willed vs Mild	-237	836	101	-187	034	-082	111	-154	084	-077	112	-118	875
3 Confrontative vs Cooperative	353	624	272	-100	239	059	113	-077	000	-111	202	-221	763
21 Suspicious vs Trustful	133	715	-050	310	023	196	001	003	307	134	182	-221	801
21 Rigid vs Adaptable	226	629	-266	079	-245	179	106	000	079	178	-057	-196	707
17 Hard, Stern vs Kindly	-074	737	-106	-521	-005	-023	175	-040	-138	-034	182	-115	931
5 Cool, Aloof vs Attentive to People	652	655	-012	-147	-116	-240	221	341	034	-226	170	169	1125
31 Attention: Settling vs Self-sufficient	-504	571	321	119	024	-095	-050	111	104	-100	-094	014	749
16 Relaxed, Indifferent vs Indistinctly Orderly	-110	-133	738	-002	206	007	-101	128	-106	-174	-317	177	718
1 Prudish vs Reckless	023	416	585	064	483	-128	010	-021	-079	-091	-026	-036	787
26 Unconventional vs Conventional	-209	604	332	-244	339	-244	-110	010	003	-200	-036	054	869
15 Outgoing vs Reserved	110	047	704	206	454	-073	058	030	-019	-132	167	-197	853
23 Unconventional vs Conventional	-264	343	488	-334	-147	-002	-119	-154	013	093	136	219	686
26 Neurotic vs Not So	-025	469	120	546	-133	-012	-182	171	-084	-044	131	-100	667
26 Nervous, Anxious vs Placid	118	152	-130	812	033	055	-086	-100	-10	-201	-086	-080	787
12 Easily upset vs Poised, Tough	-115	416	-049	544	-125	016	-168	170	-206	131	-171	115	787
11 Psychosomatic vs Not So	-443	376	198	537	130	082	-007	-113	-056	-022	174	-265	638
12 Emotional vs Calm	-044	543	374	416	326	017	-130	-010	057	-040	-094	-070	714
2 Changeable vs Emotionally Stable													
6 Imaginative vs Intellectual, Cultured	041	269	147	104	845	-07	-012	179	068	091	135	036	830
27 Lacking artistic feeling vs Artistically Fastidious	-026	-092	135	-038	780	618	035	139	014	-167	-004	142	558
14 Practical, Logical vs Imaginative	106	123	-531	-399	179	198	244	177	070	038	159	-228	700
19 Clean, Neat vs Polished	-004	259	319	-021	469	540	-272	-262	095	071	049	-046	861
30 Immature vs Independent-Minded	301	368	083	375	761	-098	-113	101	-078	129	096	162	913

APPENDIX G: Study G Factor Analysis

TABLE G1. Intercorrelations Among Trait Ratings from Fiske's Teammates^a
(N = 128 male first-year graduate students in clinical psychology)

Trait Variable No. Name	14	28	16	3	7	35	32	10	1	9	21	5	4	25	24	6	2	37	8	34	19	30
14 Silent vs Talkative																						
28 Secretive vs Frank	61																					
16 Cautious vs Adventurous	71	50																				
3 Submissive vs Assertive	64	46	54																			
7 Languid vs Energetic	71	54	59	53																		
35 Slight vs Marked Interest in Opposite Sex	54	57	58	47	50																	
32 Depressed vs Cheerful	66	61	58	35	54	52																
10 Spiteful vs Goodnatured	-02	17	14	-22	04	07	28															
1 Obstructive vs Cooperative	18	30	24	00	17	08	38	50														
9 Suspicious vs Trustful	02	22	20	-12	08	18	26	56	42													
21 Rigid vs Adaptable	38	39	54	16	25	37	52	41	45	40												
5 Cool, Aloof vs Attentive to People	41	55	37	22	36	26	50	35	52	35	47											
4 Frivolous vs Reasonable	-24	-11	-32	-15	-22	-34	-19	03	01	09	-04	-01										
25 Unscrupulous vs Conscientious	-21	-10	-24	-20	-18	-30	-09	23	22	31	08	10	44									
24 Worrying, Anxious vs Placid	-01	-01	10	-15	-23	06	23	36	39	35	34	18	10	20								
6 Easily Upset vs Poised, Tough	14	04	19	11	-17	09	24	14	27	16	34	17	15	12	59							
2 Changeable vs Emotionally Stable	03	09	01	-07	02	-03	13	24	50	26	08	31	32	19	38	28						
37 Dependent vs Self-sufficient	09	07	19	10	-07	12	19	34	27	28	45	21	18	32	45	33	10					
8 Boorish vs Intellectual, Cultured	33	29	39	34	12	17	19	14	26	18	38	32	18	19	16	28	09	32				
34 Practical, Logical vs Imaginative	35	38	49	34	34	35	38	19	31	23	42	39	-02	09	07	08	01	27	53			
19 Clumsy, Awkward vs Polished	15	14	30	07	01	18	25	40	42	33	54	46	14	33	40	35	22	46	47	44		
30 Immature vs Independent-Minded	33	28	39	45	32	27	20	05	12	10	23	18	15	17	22	17	05	44	44	40	31	

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APPENDIX G (Continued)

TABLE G2. Loadings on Five Orthogonalized Multiple-Group and One Centroid Factor from Fiske's Teammates Ratings
(N = 128 male first-year graduate students in clinical psychology)

Trait Variable		I	II	III	IV	V	VI	Σ
No.	Name							
14	Silent vs Talkative	764	-151	-206	130	390	279	896
28	Secretive vs Frank	633	139	-104	-094	381	224	634
16	Cautious vs Adventurous	604	-035	-438	105	555	-113	889
3	Submissive vs Assertive	560	-416	-128	087	353	172	688
7	Languid, Slow vs Energetic	776	019	-130	-270	221	155	766
35	Slight vs Marked Interest in Opposite Sex	625	-022	-415	109	320	-176	709
32	Depressed vs Cheerful	635	264	-186	198	386	126	711
10	Spiteful vs Goodnatured	-067	677	-055	-055	343	-146	608
1	Obstructive vs Cooperative	051	533	-053	076	466	265	582
9	Suspicious vs Trustful	020	587	110	-019	348	-157	503
21	Rigid vs Adaptable	208	295	-170	115	630	-115	591
5	Cool, Aloof vs Attentive to People	281	324	-077	-090	550	290	565
4	Frivolous vs Responsible	-427	-018	577	023	141	244	566
25	Inscrupulous vs Conscientious	-441	238	456	-097	287	098	560
24	Worrying, Anxious vs Placid	-175	432	001	620	296	-108	702
6	Easily Upset vs Poised, Tough	-074	102	060	669	334	106	589
2	Changeable vs Emotionally Stable	-018	459	282	231	150	350	490
37	Dependent vs Self-sufficient	-129	177	161	258	494	-263	454
8	Boorish vs Intellectual, Cultured	002	-133	081	047	708	060	531
34	Practical, Logical vs Imaginative	161	-053	-128	-173	713	-023	584
19	Climsy, Awkward vs Polished	-163	186	046	126	706	-060	581
30	Immature vs Independent-Minded	188	-198	180	148	511	-098	451

APPENDIX G (Continued)

TABLE G3 Loadings on Six Rotated Factors from Fiske's Teammates Ratings
(N = 128 male first-year graduate students in clinical psychology)

Trait Variable	No.	I	II	III	IV	V	VI	Σ
<u>Names</u>								
Silent vs Talkative	14	883	-115	-050	180	159	192	890
Secretive vs Frank	28	751	178	336	-017	155	066	626
Cautious vs Adventurous	16	703	057	-358	238	447	015	882
Subsidiary vs Assertive	3	674	-368	-013	145	244	115	684
Lamby, Slow vs Energetic	7	840	034	-060	-205	073	-054	760
Slight vs Marked Interest in Opposite Sex	35	646	021	-434	202	260	-062	708
Depressed vs Cheerful	32	720	293	-097	271	105	083	705
Spiteful vs Goodnatured	10	-004	735	-023	055	217	-107	602
Obstructive vs Cooperative	1	225	602	180	133	217	239	567
Suspicious vs Trustful	9	058	631	098	115	181	-206	500
Rigid vs Adaptable	21	331	396	-075	307	465	-020	582
Cool, Aloof vs Attentive to People	5	478	444	175	001	324	193	573
Frivolous vs Respectable	4	-357	-004	686	046	043	034	603
Unscrupulous vs Conscientious	25	-350	287	555	-015	200	-053	556
Worrying, Anxious vs Placid	24	-159	453	001	666	077	078	686
Hardly Upset vs Poised, Tough	6	-012	128	145	690	995	229	575
Changeable vs Emotionally Stable	2	061	444	416	216	-154	188	480
Dependent vs Self-sufficient	37	-089	249	134	421	376	-189	442
Boorish vs Intellectual, Cultured	8	185	-001	274	213	605	054	524
Practical, Logical vs Imaginative	34	349	094	059	007	678	-005	594
Clumsy, Awkward vs Polished	19	-002	317	199	297	585	017	571
Immature vs Independent-Minded	30	260	-121	207	316	418	-149	422

APPENDIX H: Study H Factor Analysis

TABLE H1. Intercorrelations Among Trait Ratings from Fiske's Staff Ratings^a
(N = 128 male first-year graduate students in clinical psychology)

Trait Variable	14	28	16	3	7	35	32	10	1	9	21	5	4	25	24	6	2	37	8	34	19	30
No. Name																						
14 Silent vs Talkative		49	50	68	66	38	64	-04	-07	05	34	61	-32	-31	18	30	-12	08	30	26	03	17
28 Secretive vs Frank			44	19	49	20	49	43	33	47	54	52	10	29	22	21	03	08	30	23	14	07
16 Cautious vs Adventurous				40	37	35	51	34	09	03	51	48	-14	03	24	34	-07	39	31	26	08	32
3 Submissive vs Assertive					45	41	36	-32	-33	-26	10	33	-23	-34	14	28	-18	32	36	29	03	48
7 Languid, Slow vs Energetic						18	41	00	-05	02	20	48	-15	-06	-18	-13	-31	-11	25	26	-18	12
35 Slight vs Marked Interest in Opposite Sex							40	00	04	03	25	38	-35	-33	35	36	-26	22	13	18	13	21
32 Depressed vs Cheerful								30	30	41	55	59	-13	-04	54	46	17	31	18	12	24	14
10 Spiteful vs Goodnatured									70	71	57	42	47	66	24	25	35	11	04	02	36	-10
1 Obstructive vs Cooperative										57	44	35	44	54	26	24	42	10	06	34	33	-12
9 Suspicious vs Trustful											52	35	30	51	37	32	39	13	-04	-13	23	-14
21 Rigid vs Adaptable												50	13	26	47	47	15	40	45	37	40	25
5 Cool, Aloof vs Attentive to People													02	12	30	39	13	09	21	23	25	03
4 Fearful vs Responsive														75	-11	08	37	07	08	07	30	09
21 Ungracious vs Conscientious															-08	01	30	04	03	02	23	-03
24 Worrying, Anxious vs Placid																70	58	42	13	05	48	17
5 Easily Upset vs Poised, Tough																	23	55	31	17	58	34
2 Changeable vs Emotionally Stable																		11	-17	-27	26	-17
37 Dependent vs Self-sufficient																			38	23	41	59
8 Boorish vs Intellectual, Cultured																				65	45	67
34 Practical, Logical vs Imaginative																					31	57
19 Clumsy, Awkward vs Polished																						26
30 Immature vs Independent-Minded																						

^a Made available through the courtesy of Dr. Donald W. Fiske and reproduced with his permission. Certain variables have been reflected from the original matrix. Decimals have been omitted.

APPENDIX H (Continued)

TABLE H2. Loadings on Five Orthogonalized Multiple-Group and One Centroid Factor from Fiske's Staff Ratings

(N = 128 male first-year graduate students in clinical psychology)

Trait Variable		I	II	III	IV	V	VI	Σ^2
No.	Name							
14	Silent vs Talkative	846	-073	-028	-068	268	056	801
26	Secretive vs Frank	468	452	101	-169	304	184	585
16	Cautious vs Adventurous	561	137	036	046	295	117	438
3	Submissive vs Assertive	661	-431	293	282	309	090	891
7	Laquid, Slow vs Energetic	672	-039	283	-454	150	121	765
35	Slight vs Marked Interest in Opposite Sex	484	-007	-384	075	200	-222	477
32	Depressed vs Cheerful	674	372	-194	155	245	153	738
10	Spiteful vs Goodnatured	010	870	070	-384	191	080	810
1	Obstructive vs Cooperative	-073	748	-007	-050	218	-114	636
9	Suspicious vs Trustful	064	807	-063	134	027	184	712
21	Rigid vs Adaptable	266	524	-217	-070	595	217	798
5	Cool, Aloof vs Attentive to People	622	406	015	-036	313	-221	700
4	Frivolous vs Responsible	-405	462	533	078	204	-064	714
25	Unscrupulous vs Conscientious	-312	690	484	-078	127	064	834
24	Worrying, Anxious vs Placid	201	303	-490	520	309	087	746
6	Easily Upset vs Baised, Tough	233	248	-185	628	481	-086	783
2	Changeable vs Emotionally Stable	-149	493	022	472	-082	104	506
37	Dependent vs Self-sufficient	101	057	-036	439	463	228	474
8	Roorish vs Intellectual, Cultured	066	-126	024	-125	836	194	774
34	Practical, Logical vs Imaginative	078	-161	087	-214	733	-030	624
19	Clumsy, Awkward vs Polished	-144	286	-111	340	633	-184	664
30	Immature vs Independent-Minded	079	-271	199	192	681	245	680

APPENDIX H (Continued)

TABLE H3 Loadings on Six Rotated Factors from Fiske's Staff Ratings
(N = 128 male first-year graduate students in clinical psychology)

Trait variable		I	II	III	IV	V	VI	Σ
No.	Name							
14	Silent vs Talkative	857	099	-138	048	077	071	777
28	Secretive vs Frank	464	511	223	003	122	175	572
16	Cautious vs Adventurous	573	193	076	160	096	110	418
3	Submissive vs Assertive	772	-447	104	182	167	075	873
7	Languid, Slow vs Energetic	713	143	035	-427	130	140	749
35	Slight vs Marked Interest in Opposite Sex	440	170	-356	276	000	-207	468
32	Depressed vs Cheerful	668	432	-015	366	-065	166	722
10	Spiteful vs Goodnatured	-039	768	415	098	-029	-102	784
1	Obstructive vs Cooperative	-112	680	315	143	027	-169	623
9	Suspicious vs Trustful	-046	667	316	283	-204	186	703
21	Rigid vs Adaptable	273	664	064	311	375	166	784
5	Cool, Aloof vs Attentive to People	614	471	130	135	014	-223	684
4	Frivolous vs Responsible	-322	185	735	-009	155	-128	719
25	Unscrupulous vs Conscientious	-282	446	735	-105	064	020	834
24	Worrying, Anxious vs Placid	127	296	-147	784	001	069	745
6	Easily Upset vs Poised, Tough	251	144	130	804	117	-134	779
2	Changeable vs Emotionally Stable	-228	211	353	447	-276	105	508
37	Dependent vs Self-sufficient	157	-019	156	557	278	172	466
8	Boorish vs Intellectual, Cultured	247	071	035	139	817	094	763
34	Practical, Logical vs Imaginative	256	037	028	-006	729	-117	613
19	Clumsy, Awkward vs Polished	-039	241	188	573	407	-273	655
30	Immature vs Independent-Minded	260	-252	186	276	635	155	668

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Aeronautical Systems Division, Personnel Laboratory,
Wright Air Force Base, Texas. RECURRENT PER-
SONALITY FACTORS BASED ON TRAIT RATINGS by
Ernest C. Tupes and Raymond E. Christal, May 1961.
vi + 40 p. (Project 777; Task 17110) (ASD-TN-61-97)
Unclassified report

Intercorrelations among ratings on 35 personality traits,
selected as representative of the personality domain, were
obtained for eight samples. These samples differed in
length of acquaintance from three days to more than a
year; in kind of acquaintance from assessment programs
in a military training course to a fraternity house situation,
in type of subject from airman with only a high school
education to male and female undergraduate students to
first-year graduate students; and in type of rating from very

(over)

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naive persons to clinical psychologists and psychiatrists
with years of experience in the evaluation of personality.
Centroid or multiple-group factors were extracted and
rotated orthogonally to simple structure. For one study,
an independent solution was obtained in which analytic
rotations were accomplished on an IBM 450 computer using
Kaiser's normal variance criterion. Five fairly strong and
recurrent factors emerged from each analysis, labeled as
1) Surgency, 2) Agreeableness, 3) Dependability,
(4) Emotional Stability, and (5) Culture.

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